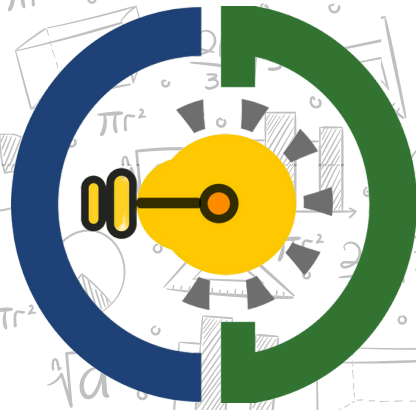


REVISION SHEET

WITH DETAILED SOLUTIONS



CAREER DEFINER

QUADRATIC EQUATION

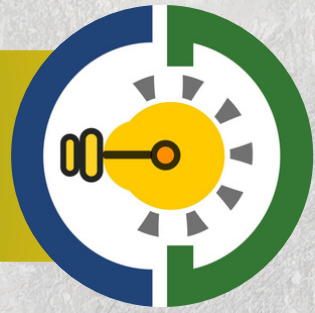
For SBI PO/Clerk,
IBPS PO/ Clerk,
RRB PO/ Clerk,
RBI Assistant, RBI
Grade B, LIC AAO,
NABARD etc.



KAUSHIK MOHANTY

More than 8 Years Experience

About KAUSHIK MOHANTY

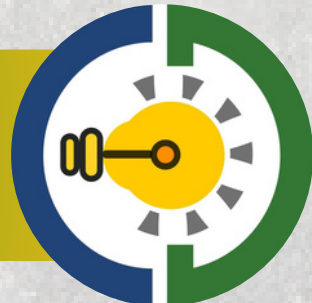


- **Educator & Ex-Banker**
- Cleared **IBPS, RRB & SBI** Exams and served **Regional Rural Banks** For One and Half Years
- **Teaching Experience** of more than 8 Years (Online & Offline)
- **Founder of**  Career Definer
- Mentored **thousands** of offline students in more than **30 institutions**
- **Followed by** Millions of Students for their Bank Exam Preparation.





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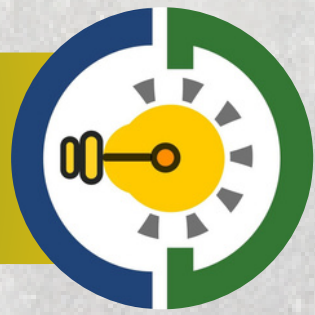
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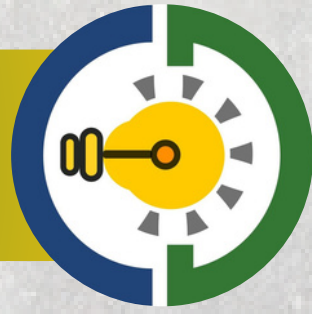
- Topic Wise Mains Level Arithmetic:
- Data Sufficiency
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- Topic Wise Mains Level Arithmetic DI:
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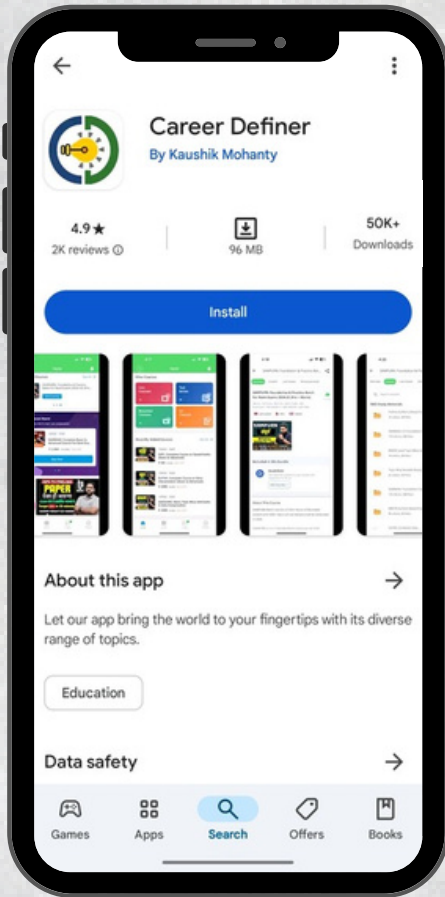
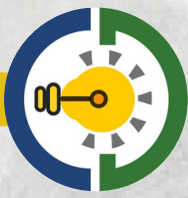
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Ex-Banker & Educator



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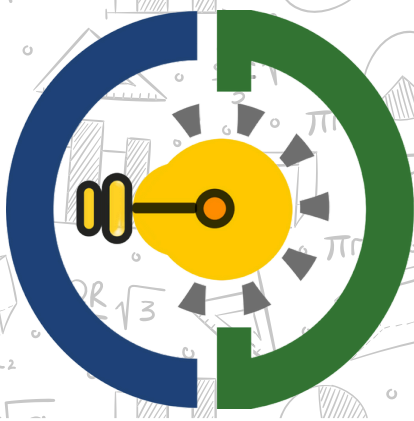


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REVISION SHEET (PART - 1)

WITH DETAILED SOLUTIONS



KAUSHIK MOHANTY

More than 8 Years Experience

QUADRATIC EQUATION

In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and answer the following questions.

इनमें से प्रत्येक प्रश्न में दो समीकरण (I) और (II) दिए गए हैं। आपको दोनों समीकरणों को हल करना है और निम्नलिखित प्रश्नों के उत्तर देने हैं।

- 1) $x^2 + x - 56 = 0$
 $y^2 - y - 210 = 0$
 a) $x > y$
 b) $x < y$
 c) $x \geq y$
 d) $x \leq y$
 e) $x = y$ or cannot be determined

- 2) $x^2 + 20x + 64 = 0$
 $y^2 + y - 156 = 0$
 a) $x > y$
 b) $x < y$
 c) $x \geq y$
 d) $x \leq y$
 e) $x = y$ or cannot be determined

- 3) $x^2 - 28x + 195 = 0$
 $y^2 - 32y + 255 = 0$
 a) $x > y$
 b) $x < y$
 c) $x \geq y$
 d) $x \leq y$
 e) $x = y$ or cannot be determined

- 4) $x^2 - 42x + 432 = 0$
 $y^2 + 24y - 756 = 0$
 a) $x > y$
 b) $x < y$
 c) $x \geq y$
 d) $x \leq y$
 e) $x = y$ or cannot be determined

- 5) $x^2 - 14x + 48 = 0$
 $y^2 - 22y + 117 = 0$
 a) $x > y$

- b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

- 6) $x^2 - 22x + 105 = 0$
 $y^2 - 32y + 255 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

- 7) $x^3 - 8x^2 + 16x = 0$
 $y^3 - 5y^2 + 6y = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

- 8) $x^3 - 18x^2 + 65x = 0$
 $y^3 + y^2 - 30y = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

- 9) $x^2 - 36x + 180 = 0$
 $y^2 + 24y + 135 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

- 10) $x^2 - 27x + 180 = 0$
 $y^2 - 32y + 255 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

11) $4x^2 - 33x + 35 = 0$
 $7y^2 - 37y + 36 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

12) $x^2 + (29\sqrt{2})x + 420 = 0$
 $y^2 + (31\sqrt{2})y + 480 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

13) $x^2 - (13\sqrt{3})x + 108 = 0$
 $y^2 - (22\sqrt{3})y + 351 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

14) $3x^2 - 35x + 72 = 0$
 $5y^2 - 18y - 56 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

15) $2y^2 + 39y + 112 = 0$
 $4x^2 + 21x + 26 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or cannot be determined

16) $2x^2 + 13x - 189 = 0$
 $3y^2 + 43y + 102 = 0$
a) $x > y$

- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

17) $9x^2 - 15x - 14 = 0$
 $12y^2 - 61y + 77 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

18) $5x^2 - 2x - 3 = 0$
 $7y^2 + 16y + 9 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

19) $1.5x^2 + 9x + 7.5 = 0$
 $2.5y^2 + 10.5y + 8 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

20) $(1/9)x^2 + 2x + 5 = 0$
 $(1/16)y^2 + (31/16)y + 15 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

21) $(\sqrt[3]{125})x^2 - (\sqrt{324})x + 13 = 0$
 $(\sqrt[3]{512})y^2 + (\sqrt{36})y - 2 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

22) $17x^2/3 - 15x + 12 = 21x$
 $5y^2/7 - 13y/3 + 21 = 101y/21$

- $x > y$
- $x < y$
- $x \geq y$
- $x \leq y$
- $x = y$ or cannot be determined

23) $7x^2/2 + 52x/4 - 33/2 = 0$
 $y^2/3 + 7y/5 + 16/15 = 0$

- $x > y$
- $x < y$
- $x \geq y$
- $x \leq y$
- $x = y$ or cannot be determined

24) $(x/1.5 + 11/4.5)^2 = 0$
 $(2.5y/3 + 7/4)^2 = 0$

- $x > y$
- $x < y$
- $x \geq y$
- $x \leq y$
- $x = y$ or cannot be determined

25) $y^3 - (7)^2 = 680$
 $224 - x^3 = (2^3)$

- $x > y$
- $x < y$
- $x \geq y$
- $x \leq y$
- $x = y$ or cannot be determined

26) $4x^3 + 7 = 507$
 $11y^3 - 6 = 2370$

- $x > y$
- $x < y$
- $x \geq y$
- $x \leq y$
- $x = y$ or cannot be determined

27) $5x^3 + 20x^2 + 15x = 0$
 $y^3 - 2368 = 12^3$

- $x > y$

- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

28) $(x^2 - 10x)^3 = -9261$
 $(y^2 - 10y)^3 = -729$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

29) $x^7 = 128$
 $17y - 7x = 54$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

30) $33x + 3y = 108$
 $y^5 = 243$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

31) $3x + 7y = 36$
 $4x - 3y = 11$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

32) $8x + 3y = 124$
 $5x - 4y = 7$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$

e) $x = y$ or cannot be determined

33) $(5/4)x + 3y = 8$

$(x/3) + 7y = 2$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

34) $y/5 + x/3 = 7$

$y/5 + x/15 = 18$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

35) $(17/3)x + 2y = 10$

$2x + (15/2)y = 15$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

36) $11x/5 + 13y/3 = 61$

$5x/2 + 5y/3 = 40$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

37) $(3x + 4)^2 = 49x$

$(2y + 6)^2 = 49y$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

38) $(x + 7)^2 + 5x + 41 = 0$

$(y + 6)^2 + 2y + 12 = 0$



- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

39) $(x + 16)^2 = -8x$
 $(y - 17)^2 = 3y - 11$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

40) $x + (15 - 6x) / 7x = -4$
 $y - (29y - 77) / 11y = 9$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

41) $(x + 13)^2 = x^2 + 218 - 13y$
 $(y - 12)^2 = y^2 - 26x + 156$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

42) $x^2 - 3(x + 2) = 2(2x - 9)$
 $2y^2 - 4(4y - 3) = y^2 - 5y - 16$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

43) $2x^2 - 3(4x + 5) = x^2 - 3x + 21$
 $2y^2 + 3(y - 6) = y^2 - 5(2y - 6)$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$

e) $x = y$ or cannot be determined

44) $-15y^2 - 17y + 51 = -56y^2/2 + 207y$
 $13x^2/3 + 13x/2 + 53 = -145x/6$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

45) $2x^2 - 21/2 x = -13$
 $(30/10)y^2 - (30/3)y = (1/5)^{-3}$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

46) $(6x - 8)(36x^2 - 96x + 64) = 0$
 $(5y - 9)(25y^2 - 90y + 81) = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

47) $2.3(x^4 + 404) = 3910$
 $(y^6 - 14^3) = 12^3 - 376$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

48) $13x^7 = 28431$
 $(y^5 - 40^2 + 50) / 4.5 = 350$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

49) $15x^2 - 29x - 20 = 12x^2 - 10x + 20$
 $14y^2 - 17y + 126 = 12y^2 + 13y + 98$



- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

50) $2(2x^3 - 14x^2 - 27.5x) = 3x^3 - 20x^2 + 50x$
 $7.5y^3 + 41.5y^2 + 14.5y = 6.5y^3 + 28.5y^2 - 21.5y$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

51) $x^2 - (113/12)x + (85/4) = 0$
 $y^2 - (38/3)y + (119/3) = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

52) $(12/14)x + (15/8)y = 27$
 $(5/7)x + (12/32)y = 13$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

53) $(7/5)x^2 - 35x + 90 + 2x^2 = 0$
 $(16/9)y^2 - 13y + 14 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

54) $3x^2 + 28x - 361 = 2x(x + 14)$
 $y^2 - 27y + 420 - 3(5x - 7) = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$

e) $x = y$ or cannot be determined

55) $2x^2 + 35x + 300 = x^2 - 6.25$
 $8y^2 + 167y + 784 = -(y + y^2)$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

56) $x^2 - 25\sqrt{3}x + 432 = 0$
 $y^2 - 39\sqrt{5}y + 1890 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

57) $2\sqrt{2}x^2 - 9x + 5\sqrt{2} = 0$
 $\sqrt{3}y^2 - 76y - 79\sqrt{3} = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

58) $\left(1\frac{1}{2}\right)x^2 + \frac{59}{4}x - \left(7\frac{3}{4}\right) = 0$
 $0.5y^2 - \left(22\frac{1}{2}\right)y + 243 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

59) $\left(\frac{1}{3}\right)x^2 - \left(\frac{24}{9}\right)x - 91 = 0$
 $\frac{y^2}{5} + \left(\frac{7}{5}\right)y + \left(58\frac{4}{5}\right) = -\frac{28y}{5}$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

60) $9x^2 - 87x + 329 = (2x - 3)(3x - 2)$

$y^2 - 68y + 379 = (4 - 2y)(y - 5)$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

61) $37x^2 - 187x + 249 = (4x - 7)^2$

$y^2 - 76y + 296 = (y - 3)(14 - 9y)$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

62) $(27/8)x^2 + 25x + 81.25/2 = 0$

$(32/9)y^2 + 23y + 10 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

63) $x^3 + 25x^2 - 218x + 192 = 0$

$2(y^3 - 1) - y^2 - 166 + 34y = 2y(y^2 + 4)$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

64) $x^2 - 17x + 42 = 0$

$(0.5) * \sqrt[3]{y} - (1.5) * \sqrt[6]{y} + 1 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or cannot be determined

65) $(4 * 13/2)x^2 + (11 * 30/2)x = 26$

$y^2 + (16/5)y - 9 = 0$

a) $x > y$



- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

66) $84x^2 - 440x/6 + 666 = 83x^2 - 1540x/24 + 645$
 $75y^2 - 835y/6 + 945 = 74y^2 - 762y/6 + 910$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

67) $2x^2 + 332 + 36x = x^2 + (136x)/4 + 2224/4$
 $2y^3 + 160 = y^3 + 484 * 6$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

68) $5x^2 - 243x/5 + 483 = 4x^2 - 30x + 429$
 $17y^2 - 657y/2 + 985/2 = 16y^2 - 296y + 229$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

69) $x^2 - 17x + 42 = 0$
 $(0.5) * \sqrt[3]{y} - (1.5) * \sqrt[6]{y} + 1 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

70) $x^3 = 14 * 19 + 8 * 15 + \sqrt[3]{(1728) * 25 + 6^3 + 49 * 2}$
 $y^2 = 165 + (x - 6)y$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

- 71) If one of the roots of the given below quadratic equation is $\frac{3}{2}$ then find the value of 'u'.
यदि नीचे दिए गए द्विघात समीकरण का एक मूल $\frac{3}{2}$ है तो 'u' का मान ज्ञात कीजिए।

$$(\sqrt{64x^4}) - 240/(\sqrt{17^2 * x^{-2}} - 15^2 * x^{-2}) + u = 0$$

- a) 144
- b) 27
- c) 125
- d) 36
- e) 81

- 72) Value of 'x' equals the square of the smaller root of the equation ' $a^2 - 22a = 6^2 - 11^2$ '. Find which of the following relations is true.

'x' का मान समीकरण ' $a^2 - 22a = 6^2 - 11^2$ ' के छोटे मूल के वर्ग के बराबर है। निम्नलिखित में से कौन सा संबंध सत्य है, यह पता लगाएँ।

$$18x - 23y = 59$$

$$12y + 15z = 489$$

- a) $x > y > z$
- b) $x > y < z$
- c) $x < y < z$
- d) $x < y > z$
- e) $z > x > y$

- 73) $\sqrt{(243x^4 + 81x^4)} + 78x + (1156)^{(1/2)} = -185x - 120$

$$\sqrt[3]{(8y^3)} * y + 149y + 167 = 74y - 326$$

What is the sum of the smaller roots of both equations?

दोनों समीकरणों के छोटे मूलों का योग क्या है?

- a) 47
- b) -22.5
- c) -9
- d) -43
- e) None of these

- 74) I: $25X^{17} / 5^2X^{15} - 265X^{18} / 5X^{17} + 2808X^2 / (2X)^2 = 0$

$$\text{II: } \sqrt[3]{(Y^{32} / Y^{24})} - 64Y^{12} / 8Y^{11} - 468 = 0$$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or cannot be determined

- 75) Quadratic equation: $x^2 + 32x - 369 = 0$

Rule: The value of A is the sum of the smaller root of the equation and 25, and the value of B is thrice the larger root of the equation.

Find the value of $(A^2 - 11B)$

नियम: A का मान समीकरण के छोटे मूल और 25 का योग है, तथा B का मान समीकरण के बड़े मूल का तीन गुना है।

$(A^2 - 11B)$ का मान ज्ञात कीजिए।

- a) 41
- b) 27
- c) -16
- d) -41
- e) None of these

76) Quadratic equation: $x^2 - 52x + 555 = 0$

Rule: The value of A is the square of the smaller root of the equation and the value of B is twice the larger root of the equation.

Find the value of $(2A - 3B)$

नियम: A का मान समीकरण के छोटे मूल का वर्ग होता है और B का मान समीकरण के बड़े मूल का दोगुना होता है।

$(2A - 3B)$ का मान ज्ञात करें

- a) 228
- b) 225
- c) 222
- d) 218
- e) 238

77) The value of 'a' is 10% less than the value of 'b' and the product of 'b' and 'x' is 140. Find the ratio of 'x' and 'y'.

'a' का मान 'b' के मान से 10% कम है तथा 'b' और 'x' का गुणनफल 140 है। 'x' और 'y' का अनुपात ज्ञात कीजिए।

I: $(21/x) + (66/y) = a$

II: $(35/x) + (55/y) = b$

- a) 6: 11
- b) 1: 2
- c) 14: 11
- d) 9: 13
- e) 8: 11

78) The value of 'p' is 10% of the value of 'q'. The sum of 'p' and 'q' is 11. Find the sum of the values of 'x' and 'y'.

'p' का मान 'q' के मान का 10% है। 'p' और 'q' का योग 11 है। 'x' और 'y' के मानों का योग ज्ञात कीजिए।

I: $(x/60) + (y/125) = p\% \text{ of } 45$



II: $(x/50) + (y/100) = q\%$ of 5.5

- a) 20
- b) 10
- c) 15
- d) 50
- e) 40

- 79) One of the roots in equation I is $5/3$. Find the sum of the highest roots of both equations.
समीकरण I में एक मूल $5/3$ है। दोनों समीकरणों के उच्चतम मूलों का योग ज्ञात कीजिए।

I: $\sqrt[3]{(64x^6)} + a - 31x = (x + 9)^2 + 7x$

II: $2y^2 + 42y - 70 = y^2 + 64y - a$

- a) 24
- b) 44
- c) 30
- d) 39
- e) 33

- 80) Find the value of $\sqrt{a + b}$
 $\sqrt{a + b}$ का मान ज्ञात कीजिए

I: $6x^2 + 45x + 876 = (2x + 13)^2 + 2x^2 - 7x + 277 + a$

II: $y^2 + 207 + 28y = (y + 14)^2 + b$

- a) 23
- b) 17
- c) 19
- d) 27
- e) 21

- 81) I: $x^b + 18x = 45x - 126a$

II: $y^a = 9261/y^2$

The value of 'b' is the smallest prime number and one of the roots of equation I is 6. Find the roots of equation II.

'b' का मान सबसे छोटी अभाज्य संख्या है और समीकरण I का एक मूल 6 है। समीकरण II का मूल ज्ञात कीजिए।

- a) 21, 19, 20
- b) 19, 19, 19
- c) 17, 18, 17
- d) 21, 21, 21
- e) 23, 21, 20

- 82) The value of $(a + b) = 20$ and the value of $(b^2 - a^2) = 80$. Find the value of 'a' and 'b', then answer the questions.

What is the value of $(x * y)$?

$(a + b)$ का मान = 20 और $(b^2 - a^2)$ का मान = 80 है। 'a' और 'b' का मान ज्ञात करें, फिर प्रश्नों के उत्तर दें।

$(x * y)$ का मान क्या है?

I: $bx + ay = 132$

II: $(b - 2)x + (a - 4)y = 94$

- a) 72
- b) 56
- c) 24
- d) 36
- e) 42

83) The value of $(a + b) = 20$ and the value of $(b^2 - a^2) = 80$. Find the value of 'a' and 'b', then answer the questions.

If the value of 'c' is 50% of b and the value of 'd' is 25% of a, then find the value of $(x + y)$.

$(a + b)$ का मान = 20 और $(b^2 - a^2)$ का मान = 80 है। 'a' और 'b' का मान ज्ञात करें, फिर प्रश्नों के उत्तर दें।

यदि 'c' का मान b का 50% है और 'd' का मान a का 25% है, तो $(x + y)$ का मान ज्ञात करें।

I: $cx + dy = 52$

II: $(c + 3)x + 5y = 100$

- a) 15
- b) 25
- c) 22
- d) 16
- e) 12

84) The value of 'c' is the largest root of the equation ' $9a^2 - 49a + 20 = 0$ '. Find the relation between x and y.

'c' का मान समीकरण ' $9a^2 - 49a + 20 = 0$ ' का सबसे बड़ा मूल है। x और y के बीच संबंध ज्ञात कीजिए।

I: $cx^3 = 8640$

II: $y^2 - (c + 34)y + 374 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or No relationship can be established

85) Solve the given quadratic equation and find the relation between x and y. Here one of the roots of equation I is $(-3/5)$.

दिए गए द्विघात समीकरण को हल करें और x और y के बीच संबंध ज्ञात करें। यहाँ समीकरण I का एक मूल $(-3/5)$ है।

I: $x^2 + 48x/a + 27/a = 0$

II: $y^2 + 27y + 36a = 0$

- a) $x > y$



- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or No relationship can be established

86) I. $3x^2 - 63x + 870 = (-4x + 6) + 2x^2$

II. $3y^2 - 71y - 2 = (-1220 + 2y^2)$

Which of the following quadratic equations is formed by the smaller root of equation I and the larger root of equation II?

निम्नलिखित में से कौन सा द्विघात समीकरण समीकरण I के छोटे मूल और समीकरण II के बड़े मूल से बनता है?

- a) $z^2 - 68z + 1107 = 0$
- b) $z^2 - 69z + 1134 = 0$
- c) $z^2 - 70z + 1176 = 0$
- d) $z^2 - 71z + 1204 = 0$
- e) $z^2 - 68z + 1120 = 0$

- 87) The quadratic equations I and II are given below. The larger root of both equations is the coefficient of m, and the smaller root of both equations is the coefficient of n, while m and n are the roots of the linear equation. You have to determine the relationship between two equations of a linear equation and choose the appropriate option.

द्विघात समीकरण I और II नीचे दिए गए हैं। दोनों समीकरणों का बड़ा मूल m का गुणांक है, और दोनों समीकरणों का छोटा मूल n का गुणांक है, जबकि m और n रैखिक समीकरण के मूल हैं। आपको एक रैखिक समीकरण के दो समीकरणों के बीच संबंध निर्धारित करना है और उपयुक्त विकल्प चुनना है।

I: $X^2 - 6X - 432 = 0$

II: $Y^2 - 18Y - 448 = 0$

Condition:

$mX + nX = 60$

$mY + nY = 220$

- a) $m > n$
- b) $m \leq n$
- c) $m < n$
- d) $m \geq n$
- e) No relationship can be determined or $m = n$

- 88) The quadratic equations I and II are given below. The larger root of both equations is the coefficient of m, and the smaller root of both equations is the coefficient of n, while m and n are the roots of the linear equation. You have to determine the relationship between two equations of a linear equation and choose the appropriate option.



द्विघात समीकरण I और II नीचे दिए गए हैं। दोनों समीकरणों का बड़ा मूल m का गुणांक है, और दोनों समीकरणों का छोटा मूल n का गुणांक है, जबकि m और n रैखिक समीकरण के मूल हैं। आपको एक रैखिक समीकरण के दो समीकरणों के बीच संबंध निर्धारित करना है और उपयुक्त विकल्प चुनना है।

I: $(X - 16)/3 = 187/X$

II: $(Y - 2)/3 + 207/Y = 16$

Condition:

$mX + nX = 208$

$mY + nY = 650$

- a) $m > n$
- b) $m \leq n$
- c) $m < n$
- d) $m \geq n$
- e) No relationship can be determined or $m = n$

89) Solve the given equation and answer the following questions.

I. $x^2 - (8\sqrt{a})x + 75 = 0$

II. $y^2 - 252 = (13\sqrt{b})y$

Use the following equations to find the value of 'a' and 'b'

III. $17a - 9b = 22$

IV. $4a + 8b = 76$

Find the relation between the values of x and y .

दिए गए समीकरण को हल करें और निम्नलिखित प्रश्नों के उत्तर दें।

I. $x^2 - (8\sqrt{a})x + 75 = 0$

II. $y^2 - 252 = (13\sqrt{b})y$

'a' और 'b' का मान ज्ञात करने के लिए निम्नलिखित समीकरणों का उपयोग करें

III. $17a - 9b = 22$

IV. $4a + 8b = 76$

x और y के मानों के बीच संबंध ज्ञात करें।

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation between x and y

90) I. $3x^2 - 22x + 35 = 0$

II. $2x^2 - 10x = 0$

Note:

1. If 8 is added to the LHS of equation II, the square of the sum of the newly formed roots is taken as 'a'.

2. If equation I and equation II are equated, the difference of the square of the newly formed roots is taken as 'b'

Find which of the following condition is true.

नोट:

1. यदि समीकरण II के बाएँ पक्ष में 8 जोड़ा जाता है, तो नवगठित मूलों के योग का वर्ग 'a' के रूप में लिया जाता है।

2. यदि समीकरण I और समीकरण II को समान किया जाता है, तो नवगठित मूलों के वर्ग का अंतर 'b' के रूप में लिया जाता है।

निम्नलिखित में से कौन सी स्थिति सत्य है, यह पता लगाएँ।

- a) $a > b$
- b) $a < b$
- c) $a \geq b$
- d) $a \leq b$
- e) $a = b$

91) In the following question two equations I and II are given. You have to solve both equations and give answers accordingly.

I: $x - 68\sqrt{x} + 480 = 0$

II: $y - 60\sqrt{y} - 256 = 0$

Statement 1: The maximum value of x is divisible by the minimum value of y.

Statement 2: One of the roots of equations I and II is the same.

Statement 3: The maximum value of y is the square of the minimum value of x.

which of the above statements is correct?

निम्नलिखित प्रश्न में दो समीकरण I और II दिए गए हैं। आपको दोनों समीकरणों को हल करना है और तदनुसार उत्तर देना है।

I: $x - 68\sqrt{x} + 480 = 0$

II: $y - 60\sqrt{y} - 256 = 0$

कथन 1: x का अधिकतम मान y के न्यूनतम मान से विभाज्य है।

कथन 2: समीकरण I और II का एक मूल समान है।

कथन 3: y का अधिकतम मान x के न्यूनतम मान का वर्ग है।

उपर्युक्त कथनों में से कौन सा सही है?

- a) Statements 3 and 1 are correct.
- b) Statements 3 and 2 are correct
- c) Statement 3 is correct.
- d) All the statements are correct
- e) Statement 2 is correct.

92) I. $x^2 - ax + (b - 3) = 0$

II. $y^2 - (a + 1)y + b = 0$

III. $z^2 - 10z + 21 = 0$

Note:

- i) The root values of I are p and 4
- ii) The root values of II are p and 5



Find which of the following statement is/ are correct.

1. One of the roots of III is equal to the value of p
2. Product of the roots of II is less than the product of the roots of III
3. One of the roots of III is greater than (b – a)

नोट:

i) I के मूल मान p और 4 हैं

ii) II के मूल मान p और 5 हैं

निम्नलिखित में से कौन सा कथन सही है/हैं, यह पता लगाएं।

1. III की एक जड़ p के मान के बराबर है
2. II की जड़ों का गुणनफल III की जड़ों के गुणनफल से कम है
3. III की एक जड़ (b – a) से बड़ी है

- a) Only 1
- b) Both 1 and 2
- c) Only 3
- d) Both 1 and 3
- e) All 1, 2 and 3

- 93) In the following question two equations I and II are given. You have to solve both equations and give answers accordingly.

I: $x^n + 2x^{n-1} + 1 = 0, n > 0$

II: $y^n - 2y^{n-1} + 1 = 0, n > 0$

Statement 1: n is an even number, then the roots are equal.

Statement 2: n is an even number, then $y > x$.

Statement 3: n is an odd number and 'n' is greater than 1, then the roots of equation (I) are not defined.

which of the above statements is correct?

निम्नलिखित प्रश्न में दो समीकरण I और II दिए गए हैं। आपको दोनों समीकरणों को हल करना है और तदनुसार उत्तर देना है।

I: $x^n + 2x^{n-1} + 1 = 0, n > 0$

II: $y^n - 2y^{n-1} + 1 = 0, n > 0$

कथन 1: n एक सम संख्या है, तो मूल बराबर हैं।

कथन 2: n एक सम संख्या है, तो $y > x$ ।

कथन 3: n एक विषम संख्या है और 'n' 1 से बड़ा है, तो समीकरण (I) के मूल परिभाषित नहीं हैं।

उपर्युक्त कथनों में से कौन सा सही है?

- a) Statements 3 and 1 are correct.
- b) Statements 3 and 2 are correct.
- c) Statement 3 is correct.
- d) All the statements are correct.
- e) Statement 2 is correct



94) In the following question two equations I and II are given. You have to solve both quadratic equations and give answers accordingly.

I: $25y^2 - 120y + 144 = 0$

II: $25x^2 + 170x + 289 = 0$

Statement 1: The sum of one of the roots of x and y is an integer.

Statement 2: The sum of 5 times the one of the roots of x and 5 times the one of the roots of y gives -5.

Statement 3: The values of x and y lie between 0 to 5.

which of the above statements is correct?

निम्नलिखित प्रश्न में दो समीकरण I और II दिए गए हैं। आपको दोनों द्विघात समीकरणों को हल करना है और तदनुसार उत्तर देना है।

I: $25y^2 - 120y + 144 = 0$

II: $25x^2 + 170x + 289 = 0$

कथन 1: x और y के मूलों में से एक का योग एक पूर्णांक है।

कथन 2: x के मूलों में से एक के 5 गुना और y के मूलों में से एक के 5 गुना का योग -5 देता है।

कथन 3: x और y के मान 0 से 5 के बीच हैं।

उपर्युक्त कथनों में से कौन सा सही है?

a) Statements 2 and 1 are correct.

b) Statements 3 and 2 are correct.

c) Statement 3 is correct.

d) All the statements are correct.

e) Statement 2 is correct.

95) In the following question two equations I and II are given. You have to solve both equations and give answers accordingly.

I: $(x^2 - 16x + 64)(x^2 + 16x + 64) = 1296$

II: $13y^2 - 12y + 244 = (2y + 12)^2$

Statement 1: The value of y lies in between the maximum and minimum value of x.

Statement 2: The one-third of the maximum value of x is equal to the value of y.

Statement 3: The sum of the maximum and minimum values of x is 0.

which of the above statements is correct?

निम्नलिखित प्रश्न में दो समीकरण I और II दिए गए हैं। आपको दोनों समीकरणों को हल करना है और तदनुसार उत्तर देना है।

I: $(x^2 - 16x + 64)(x^2 + 16x + 64) = 1296$

II: $13y^2 - 12y + 244 = (2y + 12)^2$

कथन 1: y का मान x के अधिकतम और न्यूनतम मान के बीच में है।

कथन 2: x के अधिकतम मान का एक-तिहाई y के मान के बराबर है।

कथन 3: x के अधिकतम और न्यूनतम मानों का योग 0 है।

उपर्युक्त कथनों में से कौन सा सही है?

a) Statements 3 and 1 are correct.

b) Statements 3 and 2 are correct.



- c) Statement 3 is correct.
d) All the statements are correct
e) Statement 2 is correct.

The table below contains columns I and II. Column I has rows A, B, and C, and Column II has rows D, E, and F. Which parts of Column I match correctly with Column II?
नीचे दी गई तालिका में स्तंभ I और II हैं। स्तंभ I में पंक्तियाँ A, B और C हैं, तथा स्तंभ II में पंक्तियाँ D, E और F हैं। स्तंभ I का कौन सा भाग स्तंभ II से सही ढंग से मेल खाता है?

96)

Column I		Column II	
A.	$x^2 + 6x - 315 = 0$	D.	Sum of the roots is the square of a number
B.	$y^2 - 11y - 350 = 0$	E.	Difference between two roots is 6
C.	$z^2 - 49z + 580 = 0$	F.	One of the roots is the square of a prime number

- a) Only AE
b) Only BF
c) Only CD and AE
d) Only BF and CD
e) None of the above

97)

Column I		Column II	
A.	$x^2 - 5x - 84 = 0$	D.	One of the roots is greater than 10
B.	$y^2 - 19y + 88 = 0$	E.	One of the roots is a square of a number
C.	$z^2 - 16z + 63 = 0$	F.	Difference between the two roots is 5

- a) Only BD and CE
b) Only AE, BF and CE
c) Only AD, BD and CE
d) Only AF and BD
e) None of the above

98)

Column I		Column II	
A.	$3x^2 + 7x - 20 = 0$	D.	One of the roots is a prime number
B.	$2y^2 - 17y + 35 = 0$	E.	Difference between the square of one the roots and 35 is 46
C.	$z^2 - 5z - 36 = 0$	F.	Difference between the cube of one of the roots and 27 is 35



- a) Only CE
- b) Only BD and AF
- c) Only AF
- d) Only BD, CE
- e) Only BD, CE and CF

99)

Column I		Column II	
A.	$x^2 - 29x + 240 = 0$	D.	Difference between the square of the roots is 54
B.	$y^2 + 2y - 195 = 0$	E.	One of the roots is a prime number
C.	$z^2 + z - 90 = 0$	F.	One of the roots divisible by 3 will be a prime number

- a) Only AE
- b) Only BF and BE
- c) Only CF and BE
- d) Only AE and CD
- e) Both a) and c)

100)

Column I		Column II	
A.	$x^2 - 25x + p = 0$, where a and b are the roots of the equation and $(a - b) = 7$	D.	Both the roots are prime number
B.	$y^2 + 12y + q = 0$, where c and d are the roots of the equation and $(c - d) = - 26$	E.	One of the roots divided by 2 is the cube of a number
C.	$z^2 - 19z + r = 0$, where e and f are the roots of the equation and $(e - f) = 35$	F.	Sum of the roots is a prime number

Note: P, Q and R are the positive integer

- a) Only CF
- b) Only BA
- c) Only AE and CF
- d) Only BA and CF
- e) Only BC, CF and BF

SOLUTION

1) Answer

from (i)

$$x^2 + x - 56 = 0$$

$$x^2 + 8x - 7x - 56 = 0$$

$$x(x + 8) - 7(x + 8) = 0$$

$$(x - 7)(x + 8) = 0$$

$$x = 7 \text{ or } (-8)$$

from (ii)

$$y^2 - y - 210 = 0$$

$$y^2 - 15y + 14y - 210 = 0$$

$$y(y - 15) + 14(y - 15) = 0$$

$$(y + 14)(y - 15) = 0$$

$$y = (-14) \text{ or } 15$$

$x = y$ (or) the relationship cannot be established

2) Answer

from (i)

$$x^2 + 20x + 64 = 0$$

$$x^2 + 16x + 4x + 64 = 0$$

$$x(x + 16) + 4(x + 16) = 0$$

$$(x + 16)(x + 4) = 0$$

$$x = (-4) \text{ or } (-16)$$

from (ii)

$$y^2 + y - 156 = 0$$

$$y^2 + 13y - 12y - 156 = 0$$

$$y(y + 13) - 12(y + 13) = 0$$

$$(y + 13)(y - 12) = 0$$

$$y = (-13) \text{ or } 12$$

$x = y$ (or) the relationship cannot be established

3) Answer

i. $x^2 - 28x + 195 = 0$

$$x^2 - 15x - 13x + 195 = 0$$

$$x(x - 15) - 13(x - 15) = 0$$

$$(x - 13)(x - 15) = 0$$

$$x = 13, 15$$

ii. $y^2 - 32y + 255 = 0$

$$y^2 - 17y - 15y + 225 = 0$$

$$y(y - 15) - 17(y - 15) = 0$$



$$(y - 17)(y - 15) = 0$$

$$y = 17, 15$$

$$x \leq y$$

4) Answer

from equation i,

$$x^2 - 42x + 432 = 0$$

$$x^2 - 18x - 24x + 432 = 0$$

$$x(x - 18) - 24(x - 18) = 0$$

$$(x - 18)(x - 24) = 0$$

$$x = 18 \text{ and } 24$$

from equation ii,

$$y^2 + 24y - 756 = 0$$

$$y^2 + 42y - 18y - 756 = 0$$

$$y(y + 42) - 18(y + 42) = 0$$

$$(y + 42)(y - 18) = 0$$

$$y = 18 \text{ and } -42$$

$$x \geq y$$

5) Answer

from i

$$x^2 - 14x + 48 = 0$$

$$x^2 - 6x - 8x + 48 = 0$$

$$x * (x - 6) - 8 * (x - 6) = 0$$

$$(x - 6)(x - 8) = 0$$

$$x = 6 \text{ or } x = 8$$

from ii

$$y^2 - 22y + 117 = 0$$

$$y^2 - 13y - 9y + 117 = 0$$

$$y * (y - 13) - 9 * (y - 13) = 0$$

$$(y - 13)(y - 9) = 0$$

$$y = 13 \text{ or } y = 9$$

$$x < y$$

6) Answer

from i

$$x^2 - 22x + 105 = 0$$

$$x^2 - 15x - 7x + 105 = 0$$

$$x * (x - 15) - 7 * (x - 15) = 0$$

$$(x - 15)(x - 7) = 0$$

$$x = 15 \text{ or } x = 7$$

from ii



$$y^2 - 32y + 255 = 0$$

$$y^2 - 17y - 15y + 255 = 0$$

$$y * (y - 17) - 15 * (y - 17) = 0$$

$$(y - 17)(y - 15) = 0$$

$$y = 17 \text{ or } y = 15$$

$$x \leq y$$

7) Answer

from i

$$x^3 - 8x^2 + 16x = 0$$

$$x * (x^2 - 8x + 16) = 0$$

$$x * (x^2 - 4x - 4x + 16) = 0$$

$$x * (x * (x - 4) - 4 * (x - 4)) = 0$$

$$x * (x - 4)(x - 4) = 0$$

$$x = 0 \text{ or } x = 4 \text{ or } x = 4$$

from ii

$$y^3 - 5y^2 + 6y = 0$$

$$y(y^2 - 5y + 6) = 0$$

$$y(y^2 - 2y - 3y + 6) = 0$$

$$y(y(y - 2) - 3(y - 2)) = 0$$

$$y(y - 2)(y - 3) = 0$$

$$y = 0 \text{ or } y = 2 \text{ or } y = 3$$

$x = y$ or no relationship can be established

8) Answer

i) $x^3 - 18x^2 + 65x = 0$

$$x(x^2 - 18x + 65) = 0$$

$$x = 0; x^2 - 13x - 5x + 65 = 0$$

$$x = 0; x(x - 13) - 5(x - 13) = 0$$

$$x = 0; (x - 5)(x - 13) = 0$$

$$x = 0, 5, 13$$

ii) $y^3 + y^2 - 30y = 0$

$$y(y^2 + y - 30) = 0$$

$$y(y^2 - 5y + 6y - 30) = 0$$

$$y = 0; y(y - 5) + 6(y - 5) = 0$$

$$y = 0; (y + 6)(y - 5) = 0$$

$$y = 0, -6, 5$$

$x = y$ or no relationship can be established.

9) Answer

i) $x^2 - 36x + 180 = 0$

$$x^2 - 30x - 6x + 180 = 0$$



$$x(x - 30) - 6(x - 30) = 0$$

$$(x - 6)(x - 30) = 0$$

$$x = 30, 6.$$

$$\text{ii) } y^2 + 24y + 135 = 0$$

$$y^2 + 9y + 15y + 135 = 0$$

$$y(y + 9) + 15(y + 9) = 0$$

$$(y + 9)(y + 15) = 0$$

$$y = -9, -15$$

$$x > y$$

10) Answer

$$\text{i) } x^2 - 27x + 180 = 0$$

$$x^2 - 15x - 12x + 180 = 0$$

$$x(x - 15) - 12(x - 15) = 0$$

$$(x - 15)(x - 12) = 0$$

$$x = 15, 12$$

$$\text{ii) } y^2 - 32y + 255 = 0$$

$$y^2 - 15y - 17y + 255 = 0$$

$$y(y - 15) - 17(y - 15) = 0$$

$$(y - 17)(y - 15) = 0$$

$$y = 17, 15$$

$$x \leq y$$

11) Answer

from i)

$$4x^2 - 33x + 35 = 0$$

$$4x^2 - 28x - 5x + 35 = 0$$

$$4x(x - 7) - 5(x - 7) = 0$$

$$(4x - 5)(x - 7) = 0$$

$$x = 5 / 4, 7$$

from ii)

$$7y^2 - 37y + 36 = 0$$

$$7y^2 - 28y - 9y + 36 = 0$$

$$7y(y - 4) - 9(y - 4) = 0$$

$$(7y - 9)(y - 4) = 0$$

$$y = 9 / 7, 4$$

$x = y$ or no relationship can be established

12) Answer

$$\text{(i) } x^2 + (29\sqrt{2})x + 420 = 0$$

$$x^2 + 15\sqrt{2}x + 14\sqrt{2}x + 420 = 0$$

$$(x + 15\sqrt{2})(x + 14\sqrt{2})$$



$$x = -15\sqrt{2}, -14\sqrt{2}$$

$$(ii) y^2 + (31\sqrt{2}) y + 480 = 0$$

$$y^2 + 16\sqrt{2} y + 15\sqrt{2} y + 480 = 0$$

$$(y + 16\sqrt{2}) (y + 15\sqrt{2}) = 0$$

$$y = -16\sqrt{2}, -15\sqrt{2}$$

$$x \geq y$$

13) Answer

$$(i) x^2 - (13\sqrt{3}) x + 108 = 0$$

$$x^2 - 9\sqrt{3}x - 4\sqrt{3}x + 108 = 0$$

$$(x - 9\sqrt{3}) (x - 4\sqrt{3}) = 0$$

$$x = 9\sqrt{3}, 4\sqrt{3}$$

$$(ii) y^2 - (22\sqrt{3}) y + 351 = 0$$

$$y^2 - 13\sqrt{3}y - 9\sqrt{3}y + 351 = 0$$

$$y (y - 13\sqrt{3}) - 9\sqrt{3} (y - 13\sqrt{3}) = 0$$

$$(y - 13\sqrt{3}) (y - 9\sqrt{3}) = 0$$

$$y = 13\sqrt{3}, 9\sqrt{3}$$

$$x \leq y$$

14) Answer

from (i)

$$3x^2 - 35x + 72 = 0$$

$$3x^2 - 27x - 8x + 72 = 0$$

$$3x (x - 9) - 8 (x - 9) = 0$$

$$(x - 9) (3x - 8) = 0$$

$$x = 9 \text{ or } (8/3)$$

from (ii)

$$5y^2 - 18y - 56 = 0$$

$$5y^2 - 28y + 10y - 56 = 0$$

$$y (5y - 28) + 2 (5y - 28) = 0$$

$$(y + 2) (5y - 28) = 0$$

$$y = (-2) \text{ or } (28/5)$$

$$x = y \text{ (or) the relationship cannot be established}$$

15) Answer

from (i),

$$2y^2 + 39y + 112 = 0$$

$$2y^2 + 32y + 7y + 112 = 0$$

$$2y (y + 16) + 7 (y + 16) = 0$$

$$(2y + 7) (y + 16) = 0$$

$$y = (-16) \text{ or } (-7/2)$$

from (ii),



$$4x^2 + 21x + 26 = 0$$

$$4x^2 + 13x + 8x + 26 = 0$$

$$x(4x + 13) + 2(4x + 13) = 0$$

$$(x + 2)(4x + 13) = 0$$

$$x = (-2) \text{ or } (-13/4)$$

$$x > y$$

16) Answer

from i

$$2x^2 + 13x - 189 = 0$$

$$2x^2 - 14x + 27x - 189 = 0$$

$$2x(x - 7) + 27(x - 7) = 0$$

$$(x - 7)(2x + 27) = 0$$

$$x = -27/2, 7$$

$$x = -13.5, 7$$

from ii

$$3y^2 + 43y + 102 = 0$$

$$3y^2 + 9y + 34y + 102 = 0$$

$$3y(y + 3) + 34(y + 3) = 0$$

$$(y + 3)(3y + 34) = 0$$

$$y = -34/3, -3$$

$$y = -11.33, -3$$

$x = y$ or no relationship can be established

17) Answer

from i

$$9x^2 - 15x - 14 = 0$$

$$9x^2 - 21x + 6x - 14 = 0$$

$$3x * (3x - 7) + 2 * (3x - 7) = 0$$

$$(3x + 2)(3x - 7) = 0$$

$$(3x + 2)(3x - 7) = 0$$

$$x = (-2/3) \text{ or } x = (7/3)$$

from ii

$$12y^2 - 61y + 77 = 0$$

$$12y^2 - 33y - 28y + 77 = 0$$

$$3y * (4y - 11) - 7 * (4y - 11) = 0$$

$$(4y - 11)(3y - 7) = 0$$

$$(4y - 11)(3y - 7) = 0$$

$$y = (11/4) \text{ or } y = (7/3)$$

$$x \leq y$$

18) Answer



from i

$$5x^2 - 2x - 3 = 0$$

$$5x^2 - 5x + 3x - 3 = 0$$

$$5x * (x - 1) + 3 * (x - 1) = 0$$

$$(5x + 3) (x - 1) = 0$$

$$(5x + 3) (x - 1) = 0$$

$$x = (-3/5) \text{ or } x = 1$$

from ii

$$7y^2 + 16y + 9 = 0$$

$$7y^2 + 9y + 7y + 9 = 0$$

$$y * (7y + 9) + 1 * (7y + 9) = 0$$

$$(y + 1) (7y + 9) = 0$$

$$(y + 1) (7y + 9) = 0$$

$$y = -1 \text{ or } y = (-9/7)$$

$$x > y$$

19) Answer

i. $1.5x^2 + 9x + 7.5 = 0$

solving $1.5x^2 + 9x + 7.5 = 0$

multiply with 2

$$3x^2 + 18x + 15 = 0$$

$$3x^2 + 15x + 3x + 15 = 0$$

$$3x(x + 5) + 3(x + 5) = 0$$

$$(x + 5) (3x + 3) = 0$$

$$x = -1, -5$$

ii. $2.5y^2 + 10.5y + 8 = 0$

solving $2.5y^2 + 10.5y + 8 = 0$

multiply with 2

$$5y^2 + 21y + 16 = 0$$

$$5y^2 + 5y + 16y + 16 = 0$$

$$5y(y + 1) + 16(y + 1) = 0$$

$$(y + 1) (5y + 16) = 0$$

$$y = -1, -16/5$$

x = y or no relationship can be established

20) Answer

(i) $(1/9) x^2 + 2x + 5 = 0$

$$x^2 + 18x + 45 = 0$$

$$x^2 + 15x + 3x + 45 = 0$$

$$(x + 15) (x + 3) = 0$$

$$x = -15, -3$$

(ii) $(1/16) y^2 + (31/16) y + 15 = 0$



$$y^2 + 31y + 240 = 0$$

$$y^2 + 16y + 15y + 240 = 0$$

$$(y + 16)(y + 15) = 0$$

$$y = -16, -15$$

$$x \geq y$$

21) Answer

$$(i) (\sqrt[3]{125})x^2 - (\sqrt{324})x + 13 = 0$$

$$5x^2 - 18x + 13 = 0$$

$$5x^2 - 13x - 5x + 13 = 0$$

$$(5x - 13)(x - 1) = 0$$

$$x = 13/5, 1$$

$$(ii) (\sqrt[3]{512})y^2 - (\sqrt{36})y - 2 = 0$$

$$8y^2 - 6y - 2 = 0$$

$$8y^2 - 8y + 2y - 2 = 0$$

$$8y(y - 1) + 2(y - 1) = 0$$

$$(8y + 2)(y - 1) = 0$$

$$y = -1/4, 1$$

$$x \geq y$$

22) Answer

$$i. 17x^2/3 - 15x + 12 = 21x$$

$$17x^2 - 45x + 12 = 63x$$

$$17x^2 - 108x + 36 = 0$$

$$17x^2 - 102x - 6x + 36 = 0$$

$$17x(x - 6) - 6(x - 6) = 0$$

$$(x - 6)(17x - 6) = 0$$

$$x = 6, 6/17$$

$$ii. 5y^2/7 - 13y/3 + 21 = 101y/21$$

$$15y^2 - 91y + 441 = 101y$$

$$15y^2 - 192y + 441 = 0$$

$$15y^2 - 147y - 45y + 441 = 0$$

$$3y(5y - 49) - 9(5y - 49) = 0$$

$$(5y - 49)(3y - 9) = 0$$

$$y = 49/5, 3$$

$x = y$ or relationship between x and y can't be established

23) Answer

$$i. 7x^2/2 + 52x/4 - 33/2 = 0$$

multiply with 2

$$7x^2 + 26x - 33 = 0$$

$$7x^2 - 7x + 33x - 33 = 0$$



$$7x(x - 1) + 33(x - 1) = 0$$

$$(x - 1)(7x + 33) = 0$$

$$x = 1, -33/7$$

$$\text{ii. } y^2/3 + 7y/5 + 16/15 = 0$$

multiply with 15

$$5y^2 + 21y + 16 = 0$$

$$5y^2 + 5y + 16y + 16 = 0$$

$$5y(y + 1) + 16(y + 1) = 0$$

$$(5y + 16)(y + 1) = 0$$

$$y = -1, -16/5$$

$x = y$ or no relationship can be established
,

24) Answer

$$\text{i. } (x/1.5 + 11/4.5)^2 = 0$$

$$[(3x + 11)/4.5]^2 = 0$$

$$(9x^2 + 66x + 121)/20.25 = 0$$

$$9x^2 + 66x + 121 = 0$$

$$9x^2 + 33x + 33x + 121 = 0$$

$$3x(3x + 11) + 11(3x + 11) = 0$$

$$(3x + 11)(3x + 11) = 0$$

$$x = -11/3, -11/3$$

$$\text{ii. } (2.5y/3 + 7/4)^2 = 0$$

$$[(10y + 21)/12]^2 = 0$$

$$(100y^2 + 420y + 441)/144 = 0$$

$$100y^2 + 420y + 441 = 0$$

$$100y^2 + 210y + 210y + 441 = 0$$

$$10y(10y + 21) + 21(10y + 21) = 0$$

$$(10y + 21)(10y + 21) = 0$$

$$y = -21/10, -21/10$$

$$x < y$$

25) Answer

from (i)

$$y^3 - (7)^2 = 680$$

$$y^3 = 680 + 49$$

$$y^3 = 729$$

$$y = 9$$

from (ii)

$$224 - x^3 = (2^3)$$

$$x^3 = 224 - 8$$

$$x^3 = 216$$

$$x = 6$$



so, $x < y$

26) Answer

from (i)

$$4x^3 + 7 = 507$$

$$4x^3 = 500$$

$$x^3 = 125$$

$$x = 5$$

from (ii)

$$11y^3 - 6 = 2370$$

$$11y^3 = 2376$$

$$y^3 = 216$$

$$y = 6$$

so, $x < y$

27) Answer

$$(i) 5x^3 + 20x^2 + 15x = 0$$

$$5x(x^2 + 4x + 3) = 0$$

$$5x(x^2 + 3x + x + 3) = 0$$

$$5x(x + 3)(x + 1) = 0$$

$$x = 0, -3, -1$$

$$(ii) y^3 - 2368 = 12^3$$

$$y^3 = (1728 + 2368)$$

$$y^3 = 4096$$

$$y = 16$$

$$x < y$$

28) Answer

$$(i) (x^2 - 10x)^3 = -9261$$

$$(x^2 - 10x) = \sqrt[3]{-9261}$$

$$x^2 - 10x = -21$$

$$x^2 - 10x + 21 = 0$$

$$x^2 - 7x - 3x + 21 = 0$$

$$(x - 7)(x - 3) = 0$$

$$x = 7, 3$$

$$(ii) (y^2 - 10y)^3 = -729$$

$$y^2 - 10y = -9$$

$$y^2 - 10y + 9 = 0$$

$$(y - 9)(y - 1) = 0$$

$$y = 9, 1$$

$x = y$ or no relationship can be established



29) Answer

i. $x^7 = 128$ (i)

ii. $17y - 7x = 54$ (ii)

from eq (i)

$$x^7 = 2^7$$

$$x = 2$$

putting the value of x in the eq (ii)

$$17y - 14 = 54$$

$$17y = 68$$

$$y = 4$$

thus, $x < y$

30) Answer

i. $33x + 3y = 108$ (i)

ii. $y^5 = 243$ (ii)

from eq (ii)

$$y^5 = 3^5$$

$$y = 3$$

putting the value of y in the eq (i)

$$33x = 108 - 9$$

$$x = 3$$

thus, $x = y$

31) Answer

from (i)

$$3x + 7y = 36$$

multiplying by 3 we get, $9x + 21y = 108$ ----- (1)

from (ii)

$$4x - 3y = 11$$

multiplying by 7 we get, $28x - 21y = 77$ ----- (2)

solving (1) and (2), we get

$$9x + 21y + 28x - 21y = 185$$

$$37x = 185$$

$$x = 5$$

substituting the value of x in equation (i)

$$15 + 7y = 36$$

$$7y = 21$$

$$y = 3$$

so, $x > y$

32) Answer

from (i)



$$8x + 3y = 124$$

multiplying by 4 we get, $32x + 12y = 496$ ----- (1)

from (ii)

$$5x - 4y = 7$$

multiplying by 3 we get, $15x - 12y = 21$ ----- (2)

solving (1) and (2), we get

$$32x + 12y + 15x - 12y = 517$$

$$47x = 517$$

$$x = 11$$

substituting the value of x in equation (i)

$$88 + 3y = 124$$

$$3y = 36$$

$$y = 12$$

so, $x < y$

33) Answer

i. $(5/4)x + 3y = 8$

$$5x + 12y = 32.....(1)$$

ii. $(x/3) + 7y = 2$

$$x + 21y = 6.....(2)$$

equation (2) *5 – equation (1)

$$5x + 105y - 5x - 12y = 30 - 32$$

$$93y = -2$$

$$y = -2/93$$

put the value of y in equation (2)

$$x + 21 * (-2/93) = 6$$

$$x = 6 + 42/93$$

$$x = 600/93 = 200/31$$

thus $x > y$ follows

34) Answer

i. $y/5 + x/3 = 7$

$$(3y + 5x) / 15 = 7$$

$$3y + 5x = 105 (i)$$

ii. $y/5 + x/15 = 18$

$$(3y + x) / 15 = 18$$

$$3y + x = 270 (ii)$$

subtract eq (ii) from eq (i)

$$4x = - 165$$

$$x = - 165/4$$

$$x = - 41.25$$

putting the value of $x = - 41.25$ in (ii), we get



$$3y - 41.25 = 270$$

$$y = 103.75$$

thus, $x < y$

35) Answer

$$\text{i. } (17/3)x + 2y = 10 \text{ (i)}$$

$$\text{ii. } 2x + (15/2)y = 15 \text{ (ii)}$$

multiply by 3 in (i) and multiply by 2 in (ii)

$$17x + 6y = 30 \text{ (iii)}$$

$$4x + 15y = 30 \text{ (iv)}$$

eq (iii) multiply by 5 and eq (iv) multiply by 2 and subtract eq (iv) from eq (iii)

$$85x + 30y = 150$$

$$8x + 30y = 60$$

after subtracting we get,

$$77x = 90$$

$$x = 90/77$$

substitute the value of x in eq (iv)

$$4 * 90/77 + 15y = 30$$

$$15y = 30 - 360/77$$

$$15y = 1950/77$$

$$y = 130/77$$

thus, $x < y$

36) Answer

$$\text{i. } 11x/5 + 13y/3 = 61$$

multiply with 15

$$33x + 65y = 915 \text{ --- (3)}$$

$$\text{ii. } 5x/2 + 5y/3 = 40$$

$$x/2 + y/3 = 8$$

multiply with 6

$$3x + 2y = 48 \text{ --- (4)}$$

equation (4) * 11

$$33x + 22y = 528 \text{ --- (5)}$$

equation (3) - (5)

$$33x + 65y - 33x - 22y = 915 - 528$$

$$43y = 387$$

$$y = 387/43 = 9$$

substitute the value of y in equation (3)

$$33x + 65*9 = 915$$

$$33x = 915 - 585$$

$$x = 330/33 = 10$$

$x > y$



37) Answer

$$\begin{aligned} \text{(i)} \quad & (3x + 4)^2 = 49x \\ & 9x^2 + 24x + 16 = 49x \\ & 9x^2 - 25x + 16 = 0 \\ & 9x^2 - 16x - 9x + 16 = 0 \\ & (9x - 16)(x - 1) = 0 \\ & x = 16/9, 1 \\ \text{(ii)} \quad & (2y + 6)^2 = 49y \\ & 4y^2 + 24y + 36 = 49y \\ & 4y^2 - 25y + 36 = 0 \\ & 4y^2 - 16y - 9y + 36 = 0 \\ & (y - 4)(4y - 9) = 0 \\ & y = 4, 9/4 \\ & x < y \end{aligned}$$

38) Answer

$$\begin{aligned} \text{(i)} \quad & (x + 7)^2 + 5x + 41 = 0 \\ & x^2 + 14x + 49 + 5x + 41 = 0 \\ & x^2 + 19x + 90 = 0 \\ & x^2 + 10x + 9x + 90 = 0 \\ & (x + 10)(x + 9) = 0 \\ & x = -10, -9 \\ \text{(ii)} \quad & (y + 6)^2 + 2y + 12 = 0 \\ & y^2 + 12y + 36 + 2y + 12 = 0 \\ & y^2 + 14y + 48 = 0 \\ & y^2 + 8y + 6y + 48 = 0 \\ & (y + 8)(y + 6) = 0 \\ & y = -8, -6 \\ & x < y \end{aligned}$$

39) Answer

$$\begin{aligned} \text{i.} \quad & (x + 16)^2 = -8x \\ & x^2 + 32x + 256 = -8x \\ & x^2 + 40x + 256 = 0 \\ & x^2 + 32x + 8x + 256 = 0 \\ & x(x + 32) + 8(x + 32) = 0 \\ & (x + 32)(x + 8) = 0 \\ & x = -32, -8 \\ \text{ii.} \quad & (y - 17)^2 = 3y - 11 \\ & y^2 - 34y + 289 = 3y - 11 \\ & y^2 - 37y + 300 = 0 \end{aligned}$$

$$y^2 - 25y - 12y + 300 = 0$$

$$y(y - 25) - 12(y - 25) = 0$$

$$(y - 25)(y - 12) = 0$$

$$y = 25, 12$$

$$x < y$$

40) Answer

$$\text{i. } x + (15 - 6x) / 7x = -4$$

$$7x^2 + 15 - 6x = -28x$$

$$7x^2 + 22x + 15 = 0$$

$$7x^2 + 15x + 7x + 15 = 0$$

$$x(7x + 15) + 1(7x + 15) = 0$$

$$(7x + 15)(x + 1) = 0$$

$$x = -15/7, -1$$

$$\text{ii. } y - (29y - 77) / 11y = 9$$

$$11y^2 - 29y + 77 = 99y$$

$$11y^2 - 128y + 77 = 0$$

$$11y^2 - 121y - 7y + 77 = 0$$

$$11y(y - 11) - 7(y - 11) = 0$$

$$(y - 11)(11y - 7) = 0$$

$$y = 11, 7/11$$

$$x < y$$

41) Answer

$$\text{i. } (x + 13)^2 = x^2 + 218 - 13y$$

$$x^2 + 26x + 169 = x^2 + 218 - 13y$$

$$26x + 13y = 49 \dots\dots\dots \text{(i)}$$

$$\text{ii. } (y - 12)^2 = y^2 - 26x + 156$$

$$y^2 - 24y + 144 = y^2 - 26x + 156$$

$$26x - 24y = 12 \dots\dots\dots \text{(ii)}$$

subtract eq (ii) from eq (i) we get,

$$37y = 37$$

$$y = 1$$

putting the value of y in eq (i)

$$26x = 36$$

$$x = 36/26$$

$$x = 18/13$$

thus, $x > y$

42) Answer

from (i)

$$x^2 - 3(x + 2) = 2(2x - 9)$$



$$x^2 - 3x - 6 - 4x + 18 = 0$$

$$x^2 - 7x + 12 = 0$$

$$x^2 - 4x - 3x + 12 = 0$$

$$(x - 4)(x - 3) = 0$$

$$x = 4 \text{ or } 3$$

from (ii)

$$2y^2 - 4(4y - 3) = y^2 - 5y - 16$$

$$y^2 - 16y + 12 + 5y + 16 = 0$$

$$y^2 - 11y + 28 = 0$$

$$y^2 - 7y - 4y + 28 = 0$$

$$(y - 7)(y - 4) = 0$$

$$y = 7 \text{ or } 4$$

$$x \leq y$$

43) Answer

from (i)

$$2x^2 - 3(4x + 5) = x^2 - 3x + 21$$

$$x^2 - 12x - 15 + 3x - 21 = 0$$

$$x^2 - 9x - 36 = 0$$

$$(x - 12)(x + 3) = 0$$

$$x = 12 \text{ or } (-3)$$

from (ii)

$$2y^2 + 3(y - 6) = y^2 - 5(2y - 6)$$

$$y^2 + 3y - 18 + 10y - 30 = 0$$

$$y^2 + 13y - 48 = 0$$

$$(y - 3)(y + 16) = 0$$

$$y = 3 \text{ or } -16$$

$x = y$ (or) the relationship cannot be established

44) Answer

$$\text{i. } -15y^2 - 17y + 51 = -56y^2/2 + 207y$$

$$28y^2 - 15y^2 - 17y - 207y + 51 = 0$$

$$13y^2 - 224y + 51 = 0$$

$$13y^2 - 221y - 3y + 51 = 0$$

$$13y(y - 17) - 3(y - 17) = 0$$

$$(y - 17)(13y - 3) = 0$$

$$y = 17, 3/13$$

$$\text{ii. } 13x^2/3 + 13x/2 + 53 = -145x/6$$

$$26x^2 + 39x + 318 = -145x$$

$$26x^2 + 184x + 318 = 0$$

$$26x^2 + 106x + 78x + 318 = 0$$

$$2x(13x + 53) + 6(13x + 53) = 0$$



$$(13x + 53) (2x + 6) = 0$$

$$x = -53/13, -3$$

$$x < y$$

45) Answer

$$\text{i. } 2x^2 - 21/2 x = -13$$

$$4x^2 - 21x = -26$$

$$4x^2 - 21x + 26 = 0$$

$$4x^2 - 13x - 8x + 26 = 0$$

$$x (4x - 13) - 2 (4x - 13) = 0$$

$$(4x - 13) (x - 2) = 0$$

$$x = 13/4, 2$$

$$\text{ii. } (30/10) y^2 - (30/3) y = (1/5)^{-3}$$

$$3y^2 - 10y = 125$$

$$3y^2 - 10y - 125 = 0$$

$$3y^2 - 25y + 15y - 125 = 0$$

$$y (3y - 25) + 5 (3y - 25) = 0$$

$$(3y - 25) (y + 5) = 0$$

$$y = 25/3, -5$$

$x = y$ or relationship between x and y can't be established

46) Answer

$$\text{i. } (6x - 8) (36x^2 - 96x + 64) = 0$$

$$(6x - 8) = 0, (36x^2 - 96x + 64) = 0$$

$$x = 4/3, (9x^2 - 24x + 16) = 0$$

$$(9x^2 - 24x + 16) = 0$$

$$9x^2 - 12x - 12x + 16 = 0$$

$$3x(3x - 4) - 4(3x - 4) = 0$$

$$(3x - 4) (3x - 4) = 0$$

$$x = 4/3, 4/3, 4/3$$

$$\text{ii. } (5y - 9) (25y^2 - 90y + 81) = 0$$

$$(5y - 9) = 0, (25y^2 - 90y + 81) = 0$$

$$y = 9/5, (25y^2 - 90y + 81) = 0$$

$$25y^2 - 90y + 81 = 0$$

$$25y^2 - 45y - 45y - 81 = 0$$

$$5y(5y - 9) - 9(5y - 9) = 0$$

$$(5y - 9) (5y - 9) = 0$$

$$y = 9/5, 9/5, 9/5$$

$$x < y$$

47) Answer

$$\text{i. } 2.3 (x^4 + 404) = 3910$$



$$(x^4 + 404) = 3910/2.3$$

$$x^4 + 404 = 1700$$

$$x^4 = 1296$$

$$x = +6, +6, -6, -6$$

$$\text{ii. } (y^6 - 14^3) = 12^3 - 376$$

$$y^6 = 14^3 + 12^3 - 376$$

$$y^6 = 2744 + 1728 - 376$$

$$y^6 = 4096$$

$$y = +4, +4, +4, -4, -4, -4$$

$x = y$ or no relationship can be established

48) Answer

$$\text{i. } 13x^7 = 28431$$

$$x^7 = 28431/13$$

$$x^7 = 2187$$

$$x^7 = (3)^7$$

$$x = 3, 3, 3, 3, 3, 3, 3$$

$$\text{ii. } (y^5 - 40^2 + 50) / 4.5 = 350$$

$$y^5 - 40^2 + 50 = 1575$$

$$y^5 - 1550 = 1575$$

$$y^5 = 3125$$

$$y^5 = (5)^5$$

$$y = 5, 5, 5, 5, 5$$

$$x < y$$

49) Answer

$$\text{i) } 15x^2 - 29x - 20 = 12x^2 - 10x + 20$$

$$15x^2 - 29x - 20 - 12x^2 + 10x - 20 = 0$$

$$3x^2 - 19x - 40 = 0$$

$$3x^2 - 24x + 5x - 40 = 0$$

$$3x(x - 8) + 5(x - 8) = 0$$

$$(3x + 5)(x - 8) = 0$$

$$x = -5/3, 8$$

$$\text{ii) } 14y^2 - 17y + 126 = 12y^2 + 13y + 98$$

$$14y^2 - 17y + 126 - 12y^2 - 13y - 98 = 0$$

$$2y^2 - 30y + 28 = 0$$

$$\div 2$$

$$y^2 - 15y + 14 = 0$$

$$y^2 - 14y - y + 14 = 0$$

$$y(y - 14) - 1(y - 14) = 0$$

$$(y - 1)(y - 14) = 0$$

$$y = 14, 1$$



$x = y$ or no relationship can be established.

50) Answer

$$\text{i. } 2(2x^3 - 14x^2 - 27.5x) = 3x^3 - 20x^2 + 50x$$

$$4x^3 - 28x^2 - 55x = 3x^3 - 20x^2 + 50x$$

$$4x^3 - 28x^2 - 55x - 3x^3 + 20x^2 - 50x = 0$$

$$x^3 - 8x^2 - 105x = 0$$

$$x(x^2 - 8x - 105) = 0$$

$$x = 0 \text{ (or) } x^2 - 8x - 105 = 0$$

$$\text{solving } x^2 - 8x - 105 = 0$$

$$x^2 - 15x + 7x - 105 = 0$$

$$x(x - 15) + 7(x - 15) = 0$$

$$(x + 7)(x - 15) = 0$$

$$x = 0, -7, 15$$

$$\text{ii. } 7.5y^3 + 41.5y^2 + 14.5y = 6.5y^3 + 28.5y^2 - 21.5y$$

$$7.5y^3 + 41.5y^2 + 14.5y - 6.5y^3 - 28.5y^2 + 21.5y = 0$$

$$y^3 + 13y^2 + 36y = 0$$

$$y(y^2 + 13y + 36) = 0$$

$$y = 0 \text{ (or) } y^2 + 13y + 36 = 0$$

$$\text{solving } y^2 + 13y + 36 = 0$$

$$y^2 + 4y + 9y + 36 = 0$$

$$y(y + 4) + 9(y + 4) = 0$$

$$(y + 9)(y + 4) = 0$$

$$\text{values of } y = 0, -4, -9$$

$x = y$ or no relationship can be established

51) Answer

From eq. (I):

$$x^2 - (113/12)x + (85/4) = 0$$

$$\Rightarrow 12x^2 - 113x + 255 = 0$$

$$\Rightarrow 12x^2 - 68x - 45x + 255 = 0$$

$$\Rightarrow 4x(3x - 17) - 15(3x - 17) = 0$$

$$\Rightarrow (4x - 15)(3x - 17) = 0$$

$$\Rightarrow x = (15/4) \text{ and } (17/3)$$

From eq. (II):

$$y^2 - (38/3)y + (119/3) = 0$$

$$\Rightarrow 3y^2 - 38y + 119 = 0$$

$$\Rightarrow 3y^2 - 21y - 17y + 119 = 0$$

$$\Rightarrow 3y(y - 7) - 17(y - 7) = 0$$

$$\Rightarrow (3y - 17)(y - 7) = 0$$

$$\Rightarrow y = (17/3) \text{ and } 7$$

$$x \leq y$$



52) Answer

From eq. (I):

$$(12/14)x + (15/8)y = 27$$

$$\Rightarrow (6/7)x + (15/8)y = 27$$

$$\Rightarrow 48x + 105y = 1512$$

From eq. (II):

$$(5/7)x + (12/32)y = 13$$

$$\Rightarrow (5/7)x + (3/8)y = 13$$

$$\Rightarrow 40x + 21y = 728$$

Multiplying eq. (II) by 5, we have:

$$200x + 105y = 3640 \quad \text{eq. (III)}$$

Subtracting eq. (I) from eq. (III), we get:

$$(200x + 105y) - (48x + 105y) = 3640 - 1512$$

$$\Rightarrow 152x = 2128$$

$$\Rightarrow x = 14$$

Putting value $x = 14$ in eq. (II), we get:

$$40 * 14 + 21y = 728$$

$$\Rightarrow 21y = 168$$

$$\Rightarrow y = 8$$

$$x > y$$

53) Answer

From eq. (I):

$$(7/5)x^2 - 35x + 90 + 2x^2 = 0$$

$$\Rightarrow (17/5)x^2 - 35x + 90 = 0$$

$$\Rightarrow 17x^2 - 175x + 450 = 0$$

$$\Rightarrow 17x^2 - 85x - 90x + 450 = 0$$

$$\Rightarrow 17x(x - 5) - 90(x - 5) = 0$$

$$\Rightarrow (17x - 90)(x - 5) = 0$$

$$\Rightarrow x = (90/17) \text{ and } 5$$

From eq. (II):

$$(16/9)y^2 - 13y + 14 = 0$$

$$\Rightarrow 16y^2 - 117y + 126 = 0$$

$$\Rightarrow 16y^2 - 96y - 21y + 126 = 0$$

$$\Rightarrow 16y(y - 6) - 21(y - 6) = 0$$

$$\Rightarrow (16y - 21)(y - 6) = 0$$

$$\Rightarrow y = (21/16) \text{ and } 6$$

$$x = y \text{ or no relation between } x \text{ and } y$$

54) Answer

From eq. (I):



$$3x^2 + 28x - 361 = 2x(x + 14)$$

$$\Rightarrow 3x^2 + 28x - 361 = 2x^2 + 28$$

$$\Rightarrow x^2 - 361 = 0$$

$$\Rightarrow x^2 - 19^2 = 0$$

$$\Rightarrow (x + 19)(x - 19) = 0$$

$$\Rightarrow x = -19 \text{ and } 19$$

From eq. (II):

$$y^2 - 27y + 420 - 3(5x - 7) = 0$$

$$\Rightarrow y^2 - 27y + 420 - 15x + 21 = 0$$

$$\Rightarrow y^2 - 42y + 441 = 0$$

$$\Rightarrow y^2 - 2 * y * 21 + 21^2 = 0$$

$$\Rightarrow (y - 21)^2 = 0$$

$$\Rightarrow y = 21, 21$$

$$x < y$$

55) Answer

From eq. (I):

$$2x^2 + 35x + 300 = x^2 - 6.25$$

$$\Rightarrow x^2 + 35x + 306.25 = 0$$

$$\Rightarrow x^2 + 2 * x * 17.5 + 17.5^2 = 0$$

$$\Rightarrow (x + 17.5)^2 = 0$$

$$\Rightarrow x = -17.5, -17.5$$

From eq. (II):

$$8y^2 + 167y + 784 = - (y + y^2)$$

$$\Rightarrow 9y^2 + 168y + 784 = 0$$

$$\Rightarrow (3y)^2 + 2 * 3y * 28 + 28^2 = 0$$

$$\Rightarrow (3y + 28)^2 = 0$$

$$\Rightarrow y = -28/3, -28/3$$

$$x < y$$

56) Answer

From (I),

$$y^2 - 39\sqrt{5}y + 1890 = 0$$

$$y^2 - 21\sqrt{5}y - 18\sqrt{5}y + 1890 = 0$$

$$y(y - 21\sqrt{5}) - 18\sqrt{5}(y - 21\sqrt{5}) = 0$$

$$(y - 21\sqrt{5})(y - 18\sqrt{5}) = 0$$

$$y = 21\sqrt{5} \text{ and } 18\sqrt{5}$$

From (II),

$$x^2 - 25\sqrt{3}x + 432 = 0$$

$$x^2 - 16\sqrt{3}x - 9\sqrt{3}x + 432 = 0$$

$$x(x - 16\sqrt{3}) - 9\sqrt{3}(x - 16\sqrt{3}) = 0$$

$$(x - 16\sqrt{3})(x - 9\sqrt{3}) = 0$$



$$x = 16\sqrt{3} \text{ and } 9\sqrt{3}$$

$$x < y$$

57) Answer

From (I),

$$2\sqrt{2}x^2 - 9x + 5\sqrt{2} = 0$$

Multiplying with $\sqrt{2}$ we get,

$$4x^2 - 9\sqrt{2}x + 10 = 0$$

$$4x^2 - 5\sqrt{2}x - 4\sqrt{2}x + 10 = 0$$

$$x(4x - 5\sqrt{2}) - \sqrt{2}(4x - 5\sqrt{2}) = 0$$

$$(4x - 5\sqrt{2})(x - \sqrt{2}) = 0$$

$$x = 5\sqrt{2}/4 \text{ and } \sqrt{2}$$

From (II),

$$\sqrt{3}y^2 - 76y - 79\sqrt{3} = 0$$

Multiplying with $\sqrt{3}$ we get,

$$3y^2 - 76\sqrt{3}y - 237 = 0$$

$$3y^2 - 79\sqrt{3}y + 3\sqrt{3}y - 237 = 0$$

$$y(3y - 79\sqrt{3}) + \sqrt{3}(3y - 79\sqrt{3}) = 0$$

$$(3y - 79\sqrt{3})(y + \sqrt{3}) = 0$$

$$y = 79\sqrt{3}/3 \text{ and } -\sqrt{3}$$

$x = y$ or the relationship cannot be established.

58) Answer

From (I),

$$(1 \frac{1}{2})x^2 + 59x/4 - (7 \frac{3}{4}) = 0$$

$$3x^2/2 + 59x/4 - 31/4 = 0$$

$$6x^2 + 59x - 31 = 0$$

$$6x^2 + 62x - 3x - 31 = 0$$

$$2x(3x + 31) - 1(3x + 31) = 0$$

$$(3x + 31)(2x - 1) = 0$$

$$x = 1/2 \text{ and } -31/3$$

From (II),

$$0.5y^2 - (22 \frac{1}{2})y + 243 = 0$$

$$y^2/2 - 45y/2 + 243 = 0$$

$$y^2 - 45y + 486 = 0$$

$$y^2 - 18y - 27y + 486 = 0$$

$$y(y - 18) - 27(y - 18) = 0$$

$$(y - 18)(y - 27) = 0$$

$$y = 18 \text{ and } 27$$

$$x < y$$

59) Answer



From (I),

$$(1/3)x^2 - (24/9)x - 91 = 0$$

$$(1/3)x^2 - (8/3)x - 91 = 0$$

$$x^2 - 8x - 273 = 0$$

$$x^2 - 21x + 13x - 273 = 0$$

$$x(x - 21) + 13(x - 21) = 0$$

$$(x - 21)(x + 13) = 0$$

$$x = 21 \text{ and } -13$$

From (II),

$$y^2/5 + (7/5)y + (58 \frac{4}{5}) = -28y/5$$

$$y^2/5 + (7/5)y + 294/5 = -28y/5$$

$$y^2 + 35y + 294 = 0$$

$$y^2 + 21y + 14y + 294 = 0$$

$$y(y + 21) + 14(y + 21) = 0$$

$$(y + 21)(y + 14) = 0$$

$$y = -21 \text{ and } -14$$

$$x > y$$

60) Answer

From eq. (I):

$$9x^2 - 87x + 329 = (2x - 3)(3x - 2)$$

$$9x^2 - 87x + 329 = 6x^2 - 13x + 6$$

$$3x^2 - 74x + 323 = 0$$

$$3x^2 - 57x - 17x + 323 = 0$$

$$3x(x - 19) - 17(x - 19) = 0$$

$$(3x - 17)(x - 19) = 0$$

$$x = 17/3 \text{ and } 19$$

From eq. (II):

$$y^2 - 68y + 379 = (4 - 2y)(y - 5)$$

$$y^2 - 68y + 379 = 14y - 20 - 2y^2$$

$$3y^2 - 82y + 399 = 0$$

$$3y^2 - 63y - 19y + 399 = 0$$

$$3y(y - 21) - 19(y - 21) = 0$$

$$(3y - 19)(y - 21) = 0$$

$$y = 19/3 \text{ and } 21$$

$$x = y \text{ or cannot be determined}$$

61) Answer

From eq. (I):

$$37x^2 - 187x + 249 = (4x - 7)^2$$

$$37x^2 - 187x + 249 = 16x^2 - 56x + 49$$

$$21x^2 - 131x + 200 = 0$$



$$21x^2 - 56x - 75x + 200 = 0$$

$$7x(3x - 8) - 25(3x - 8) = 0$$

$$(3x - 8)(7x - 25) = 0$$

$$x = 8/3 \text{ and } 25/7$$

From eq. (II):

$$y^2 - 76y + 296 = (y - 3)(14 - 9y)$$

$$y^2 - 76y + 296 = 41y - 42 - 9y^2$$

$$10y^2 - 117y + 338 = 0$$

$$10y^2 - 65y - 52y + 338 = 0$$

$$5y(2y - 13) - 26(2y - 13) = 0$$

$$(5y - 26)(2y - 13) = 0$$

$$y = 26/5 \text{ and } 13/2$$

62) Answer

From eq. (I):

$$(27/8)x^2 + 25x + 81.25/2 = 0$$

$$27x^2 + 200x + 325 = 0$$

$$27x^2 + 135x + 65x + 325 = 0$$

$$27x(x + 5) + 65(x + 5) = 0$$

$$(27x + 65)(x + 5) = 0$$

$$x = -5 \text{ and } -65/27$$

From eq. (II):

$$(32/9)y^2 + 23y + 10 = 0$$

$$32y^2 + 207y + 90 = 0$$

$$32y^2 + 192y + 15y + 90 = 0$$

$$32y(y + 6) + 15(y + 6) = 0$$

$$(y + 6)(32y + 15) = 0$$

$$y = -6 \text{ and } -15/32$$

63) Answer

$$x^3 + 25x^2 - 218x + 192 = 0$$

$$x^3 + 26x^2 - 192x - x^2 - 26x + 192 = 0$$

$$x(x^2 + 26x - 192) - 1(x^2 + 26x - 192) = 0$$

$$(x - 1)(x^2 + 26x - 192) = 0$$

$$x = 1, (x + 26x - 192) = 0$$

$$x = 1, x - 6x + 32x - 192 = 0$$

$$x = 1, (x - 6)(x + 32) = 0$$

$$x = 1, -32, 6$$

From (II),

$$2(y^3 - 1) - y^2 - 166 + 34y = 2y(y^2 + 4)$$

$$2y^3 - 2 - y^2 - 166 + 34y - 2y^3 - 8y = 0$$

$$y^2 - 26y + 168 = 0$$



$$y^2 - 14y - 12y + 168 = 0$$

$$y(y - 14) - 12(y - 14) = 0$$

$$(y - 14)(y - 12) = 0$$

$$y = 14 \text{ and } 12$$

$$x < y$$

64) Answer

From the equation (I),
we get, $x^2 - 17x + 42 = 0$
 $x^2 - 14x - 3x + 42 = 0$
 $(x - 14)(x - 3) = 0$
 $x = 3, 14$

From equation (II),
we get, $(0.5) * \sqrt[3]{y} - (1.5) * \sqrt[6]{y} + 1 = 0$
 $0.5b^2 - 1.5b + 1 = 0$ [putting $b = \sqrt[6]{y}$]
 $b^2 - 3b + 2 = 0$
 $b^2 - 2b - 1b + 2 = 0$
 $b(b - 2) - 1(b - 2) = 0$
 $(b - 1)(b - 2) = 0$
So, $b = 1, 2$
Now, $b = \sqrt[6]{y}$, so, $y = 64, 1$
 $x = y$ or relation cannot be determined

65) Answer

I. $(4 * 13/2)x^2 + (11 * 30/2)x = 26$
 $26x^2 + 165x = 26$
 $26x^2 + 165x - 26 = 0$
 $26x^2 + 169x - 4x - 26 = 0$
 $13x(2x + 13) - 2(2x + 13) = 0$
 $(2x + 13)(13x - 2) = 0$
 $x = -13/2, 2/13$

II. $y^2 + (16/5)y - 9 = 0$
 $5y^2 + 16y - 45 = 0$
 $5y^2 + 25y - 9y - 45 = 0$
 $5y(y + 5) - 9(y + 5) = 0$
 $(y + 5)(5y - 9) = 0$
 $y = -5, 9/5$
 $x = y$ or cannot be determined

66) Answer

From I
 $84x^2 - 440x/6 + 666 = 83x^2 - 1540x/24 + 645$



$$x^2 - 440x/6 + 385x/6 + 666 - 645 = 0$$

$$x^2 - 55x/6 + 21 = 0$$

$$6x^2 - 55x + 126 = 0$$

$$6x^2 - 28x - 27x + 126 = 0$$

$$2x (3x - 14) - 9 (3x - 14) = 0$$

$$(3x - 14) (2x - 9) = 0$$

$$x = 14/3 \text{ and } 9/2$$

From II

$$75y^2 - 835y/6 + 945 = 74y^2 - 762y/6 + 910$$

$$75y^2 - 74y^2 - 835y/6 + 762y/6 + 945 - 910 = 0$$

$$y^2 - 73y/6 + 35 = 0$$

$$6y^2 - 73y + 210 = 0$$

$$6y^2 - 45y - 28y + 210 = 0$$

$$3y (2y - 15) - 14 (2y - 15) = 0$$

$$(3y - 14) (2y - 15) = 0$$

$$y = 14/3 \text{ and } 15/2$$

$$x \leq y$$

67) Answer

From I

$$2x^2 + 332 + 36x = x^2 + (136x)/4 + 2224/4$$

$$2x^2 + 332 + 36x = x^2 + 34x + 556$$

$$x^2 + 2x - 224 = 0$$

$$x^2 + 16x - 14x - 224 = 0$$

$$x(x + 16) - 14(x + 16) = 0$$

$$(x + 16) (x - 14) = 0$$

$$x = 14 \text{ and } -16$$

From II

$$2y^3 + 160 = y^3 + 484 * 6$$

$$y^3 = 484 * 6 - 160$$

$$y^3 = 2904 - 160$$

$$y^3 = 2744$$

$$y = 14$$

$$x \leq y$$

68) Answer

From I)

$$5x^2 - 243x/5 + 483 = 4x^2 - 30x + 429$$

$$x^2 - 243x/5 + 30x + 483 - 429 = 0$$

$$x^2 - 93x/5 + 54 = 0$$

$$5x^2 - 93x + 270 = 0$$

$$5x^2 - 75x - 18x + 270 = 0$$



$$5x(x - 15) - 18(x - 15) = 0$$

$$(x - 15)(5x - 18) = 0$$

$$x = 15 \text{ and } 18/5$$

From II)

$$17y^2 - 657y/2 + 985/2 = 16y^2 - 296y + 229$$

$$y^2 - 657y/2 - 296y + 985/2 - 229 = 0$$

$$y^2 - 65y/2 + 527/2 = 0$$

$$2y^2 - 65y + 527 = 0$$

$$2y^2 - 34y - 31y + 527 = 0$$

$$2y(y - 17) - 31(y - 17) = 0$$

$$(y - 17)(2y - 31) = 0$$

$$y = 17 \text{ and } 31/2$$

$$x < y$$

69) Answer

From the equation (I),

$$\text{we get, } x^2 - 17x + 42 = 0$$

$$x^2 - 14x - 3x + 42 = 0$$

$$(x - 14)(x - 3) = 0$$

$$x = 3, 14$$

From equation (II),

$$\text{we get, } (0.5) * \sqrt[3]{y} - (1.5) * \sqrt[6]{y} + 1 = 0$$

$$0.5b^2 - 1.5b + 1 = 0 \quad [\text{putting } b = \sqrt[6]{y}]$$

$$b^2 - 3b + 2 = 0$$

$$b^2 - 2b - 1b + 2 = 0$$

$$b(b - 2) - 1(b - 2) = 0$$

$$(b - 1)(b - 2) = 0$$

$$\text{So, } b = 1, 2$$

$$\text{Now, } b = \sqrt[6]{y}, \text{ so, } y = 64, 1$$

70) Answer

$$\text{I: } x^3 = 14 * 19 + 8 * 15 + \sqrt[3]{(1728)} * 25 + 6^3 + 49 * 2$$

$$x^3 = 266 + 120 + 12 * 25 + 216 + 98$$

$$x^3 = 1000$$

$$x = 10$$

$$\text{II: } y^2 = 165 + (x - 6)y$$

$$y^2 = 165 + (10 - 6)y$$

$$y^2 = 165 + 4y$$

$$y^2 - 4y - 165 = 0$$

$$y^2 - 15y + 11y - 165 = 0$$

$$y(y - 15) + 11(y - 15) = 0$$

$$(y + 11)(y - 15) = 0$$



$$y = 15 \text{ and } -11$$

71) Answer

$$(\sqrt{64x^4}) - 240/(\sqrt{17^2 * x^{-2}} - 15^2 * x^{-2}) + u = 0$$

$$8x^2 - 240/(\sqrt{289 x^{-2}} - 225 x^{-2}) + u = 0$$

$$8x^2 - 30x + u = 0$$

$$8*(3/2)^2 - 30*3/2 + u = 0$$

$$8*9/4 - 15*3 + u = 0$$

$$18 - 45 + u = 0$$

$$u - 27 = 0$$

$$u = 27$$

72) Answer

To find 'x'

$$a^2 - 22a = 6^2 - 11^2$$

$$a^2 - 22a = 36 - 121$$

$$a^2 - 22a + 85 = 0$$

$$a^2 - 17a - 5a + 85 = 0$$

$$(a - 17) - 5(a - 17)$$

$$(a - 17)(a - 5) = 0$$

$$a = 17 \text{ and } 5$$

$$\text{Smaller root} = 5$$

Then

$$x = 5^2$$

$$x = 25$$

$$\text{I: } 18x - 23y = 59$$

$$18 * 25 - 23y = 59$$

$$23y = 450 - 59$$

$$23y = 391$$

$$y = 17$$

$$\text{II: } 12y + 15z = 489$$

$$12 * 17 + 15z = 489$$

$$15z = 489 - 204$$

$$15z = 285$$

$$z = 19$$

Thus, the relation $x > y < z$ is satisfied.

73) Answer

$$\text{I: } \sqrt{(243x^4 + 81x^4)} + 78x + (1156)^{(1/2)} = -185x - 120$$

$$(\sqrt{324x^4}) + 78x + 34 = -185x - 120$$

$$18x^2 + 263x + 154 = 0$$

$$18x^2 + 252x + 11x + 154 = 0$$



$$18x(x + 14) + 11(x + 14) = 0$$

$$(18x + 11)(x + 14)$$

$$\text{So, } x = -14 \text{ and } -11/18$$

$$\text{II: } \sqrt[3]{(8y^3)} * y + 149y + 167 = 74y - 326$$

$$2y * y + 75y + 493 = 0$$

$$2y^2 + 58y + 17y + 493 = 0$$

$$2y(y + 29) + 17(y + 29) = 0$$

$$(2y + 17)(y + 29) = 0$$

$$\text{So, } y = -29 \text{ and } -17/2 \text{ (or) } -8.5$$

$$\text{Required sum} = -14 - 29 = -43$$

74) Answer

From equation I,

$$25X^{17}/5^2X^{15} - 265X^{18}/5X^{17} + 2808X^2/(2X)^2 = 0$$

$$25X^{17}/25X^{15} - 53X^{18-17} + 702 = 0$$

$$X^2 - 53X + 702 = 0$$

$$X^2 - 26X - 27X + 702 = 0$$

$$X(X - 26) - 27(X - 26) = 0$$

$$(X - 26)(X - 27) = 0$$

$$X = 26 \text{ and } 27$$

From equation II,

$$\sqrt[3]{(Y^{32}/Y^{24})} - 64Y^{12}/8Y^{11} - 468 = 0$$

$$\sqrt[3]{Y^8} - 8Y^{12-11} - 468 = 0$$

$$Y^2 - 8Y - 468 = 0$$

$$Y^2 - 26Y + 18Y - 468 = 0$$

$$Y(Y - 26) + 18(Y - 26) = 0$$

$$(Y - 26)(Y + 18) = 0$$

$$Y = 26 \text{ and } -18$$

75) Answer

$$x^2 + 32x - 369 = 0$$

$$x^2 + 41x - 9x - 369 = 0$$

$$x(x + 41) - 9(x + 41) = 0$$

$$(x - 9)(x + 41) = 0$$

$$x = 9 \text{ and } -41$$

$$A = -41 + 25 = -16$$

$$B = 9 * 3 = 27$$

$$(A^2 - 9B)$$

$$= (-16)^2 - 11 * 27$$

$$= 256 - 297$$

$$= -41$$



76) Answer

$$x^2 - 52x + 555 = 0$$

$$x^2 - 37x - 15x + 555 = 0$$

$$x(x - 37) - 15(x - 37) = 0$$

$$(x - 37)(x - 15) = 0$$

$$x = 37 \text{ and } 15$$

$$A = 15^2 = 225$$

$$B = 37 * 2 = 74$$

$$(2A - 3B)$$

$$(2*225 - 3*74)$$

$$= 450 - 222$$

$$= 228$$

77) Answer

$$(I) * 5 \rightarrow (105/x) + (330/y) = 5a$$

$$(II) * 3 \rightarrow (105/x) + (165/y) = 3b$$

$$(330/y) - (165/y) = 5a - 3b$$

$$165/y = 5a - 3b$$

$$a = (90/100) * b$$

$$a/b = 9/10$$

$$a = 9b/10$$

$$165/y = 5 * (9b/10) - 3b$$

$$165/y = 4.5b - 3b$$

$$165/y = 1.5b$$

$$b * y = 110$$

$$b * x = 140$$

$$(bx):(by) = 140:110$$

$$x:y = 14:11$$

78) Answer

$$p = 10\% \text{ of } q$$

$$p = (10/100) * q$$

$$p/q = 1/10$$

$$p:q = 1:10 = a:10a$$

Let

$$p + q = a + 10a = 11$$

$$11a = 11$$

$$a = 1$$

$$p = 1$$

$$q = 10$$

Then



$$I: (x/60) + (y/125) = p\% \text{ of } 45$$

Let

$$(x/60) + (y/125) = 1\% \text{ of } 45$$

$$(x/60) + (y/125) = 0.45$$

$$II: (x/50) + (y/100) = q\% \text{ of } 5.5$$

$$(x/50) + (y/100) = 10\% \text{ of } 5.5$$

$$(x/50) + (y/100) = 0.55$$

$$(I) * (1/5)$$

$$(x/300) + (y/625) = 0.09$$

$$(II) * (1/6)$$

$$(x/300) + (y/600) = 0.55/6$$

Solve (I) and (II)

$$(y/600) - (y/625) = (0.55/6) - 0.09$$

$$(25y/375000) = 0.01/6$$

$$y = 25$$

$$(x/50) + (25/100) = 0.55$$

$$x/50 = 0.3$$

$$x = 15$$

$$\text{Thus, sum} = 25 + 15 = 40$$

79) Answer

$$I) \sqrt[3]{(64x^6) + a - 31x} = (x + 9)^2 + 7x$$

$$4x^2 + a - 31x = (x^2 + 81 + 18x) + 7x$$

$$3x^2 - 56x + a - 81 = 0$$

One of root in equation 1 is 5/3

$$3 * (5/3)^2 - 56(5/3) + a - 81 = 0$$

$$25/3 - 280/3 + a - 81 = 0$$

$$a - 85 - 81 = 0$$

$$a = 166$$

$$3x^2 - 56x + 166 - 81 = 0$$

$$3x^2 - 56x + 85 = 0$$

$$3x^2 - 51x - 5x + 85 = 0$$

$$3x(x - 17) - 5(x - 17) = 0$$

$$(3x - 5)(x - 17) = 0$$

$$x = 5/3 \text{ and } 17$$

$$II: 2y^2 + 42y - 70 = y^2 + 64y - a$$

$$y^2 - 22y - 70 + 166 = 0$$

$$y^2 - 22y + 96 = 0$$

$$y^2 - 16y - 6y + 96 = 0$$

$$y(y - 16) - 6(y - 16) = 0$$

$$(y - 16)(y - 6) = 0$$

$$y = 16 \text{ and } 6$$



$$\text{Required sum} = 16 + 17 = 33$$

80) Answer

$$\text{I: } 6x^2 + 45x + 876 = (2x + 13)^2 + 2x^2 - 7x + 277 + a$$

$$6x^2 + 45x + 876 = 4x^2 + 169 + 52x + 2x^2 - 7x + 277 + a$$

$$6x^2 + 45x + 876 = 6x^2 + 45x + 446 + a$$

$$a = 430$$

$$\text{II: } y^2 + 207 + 28y = (y + 14)^2 + b$$

$$y^2 + 207 + 28y = y^2 + 196 + 28y + b$$

$$b = 11$$

$$\text{Value of } \sqrt{(a + b)} = \sqrt{(430 + 11)} = 21$$

81) Answer

The value of 'b' is the smallest prime number

$$\text{So, } b = 2$$

$$\text{I: } x^b + 18x = 45x - 126a$$

$$x^2 - 27x + 126a = 0$$

One of the roots of equation I is 6

$$6^2 - 27 * 6 + 126a = 0$$

$$126a - 126 = 0$$

$$a = 1$$

$$x^2 - 27x + 126 = 0$$

$$x^2 - 21x - 6x + 126 = 0$$

$$x(x - 21) - 6(x - 21) = 0$$

$$(x - 21)(x - 6) = 0$$

$$\text{So, } x = 21 \text{ and } 6$$

$$\text{II: } y^a = 9261 / y^2$$

$$y = 9261 / y^2$$

$$y^3 = 9261$$

$$y = 21, 21, 21$$

General solution:

$$a + b = 20 \rightarrow (1)$$

$$b^2 - a^2 = 80$$

$$(b + a)(b - a) = 80$$

$$20 * (b - a) = 80$$

$$b - a = 4 \rightarrow (2)$$

$$(1) + (2)$$

$$2b = 24$$

$$b = 12$$

and

$$a + 12 = 20$$



$$a = 8$$

82) Answer

$$bx + ay = 132$$

$$12x + 8y = 132 \rightarrow (1)$$

$$(b - 2)x + (a - 4)y = 94$$

$$10x + 4y = 94 \rightarrow (2)$$

$$(2) * 2 \rightarrow 20x + 8y = 188$$

$$(2) - (1)$$

$$20x - 12x = 188 - 132$$

$$8x = 56$$

$$x = 7$$

and

$$10 * 7 + 4y = 94$$

$$4y = 24$$

$$y = 6$$

$$\text{Required value} = 7 * 6 = 42$$

83) Answer

$$c = 50\% \text{ of } 12 = 6$$

$$d = 25\% \text{ of } 8 = 2$$

$$cx + dy = 52$$

$$6x + 2y = 52$$

$$3x + y = 26 \rightarrow (1)$$

$$(c + 3)x + 5y = 100$$

$$9x + 5y = 100 \rightarrow (2)$$

$$(1) * 5 \rightarrow 15x + 5y = 130$$

$$(1) - (2)$$

$$15x - 9x = 130 - 100$$

$$6x = 30$$

$$x = 5$$

and

$$3 * 5 + y = 26$$

$$y = 11$$

$$\text{Thus, sum} = 5 + 11 = 16$$

84) Answer

$$9a^2 - 49a + 20 = 0$$

$$9a^2 - 45a - 4a + 20 = 0$$

$$9a(a - 5) - 4(a - 5) = 0$$

$$(9a - 4)(a - 5) = 0$$

$$a = 5 \text{ and } 4/9$$



$$\text{So, } c = 5$$

$$\text{I: } cx^3 = 8640$$

$$5x^3 = 8640$$

$$x^3 = 1728$$

$$x = 12$$

$$\text{II: } y^2 - (c + 34)y + 374 = 0$$

$$y^2 - (5 + 34)y + 374 = 0$$

$$y^2 - 39y + 374 = 0$$

$$y^2 - 22y - 17y + 374 = 0$$

$$y(y - 22) - 17(y - 22) = 0$$

$$(y - 22)(y - 17) = 0$$

$$y = 22 \text{ and } 17$$

85) Answer

$$\text{I: } x^2 + 48x/a + 27/a = 0$$

$$(-3/5)^2 + 48 * (-3/5)/a + 27/a = 0$$

$$9/25 - (144/5a) + (27/a) = 0$$

$$9/25 = (144 - 135)/5a$$

$$9/25 = 9/5a$$

$$a = 5$$

$$x^2 + 48x/5 + 27/5 = 0$$

$$5x^2 + 48x + 27 = 0$$

$$5x^2 + 45x + 3x + 27 = 0$$

$$5x(x + 9) + 3(x + 9) = 0$$

$$(5x + 3)(x + 9) = 0$$

$$x = -3/5 \text{ and } -9$$

$$\text{II: } y^2 + 27y + 36a = 0$$

$$y^2 + 27y + 180 = 0$$

$$y^2 + 12y + 15y + 180 = 0$$

$$y(y + 12) + 15(y + 12) = 0$$

$$(y + 12)(y + 15) = 0$$

$$y = -12 \text{ and } -15$$

86) Answer

From I

$$3x^2 - 63x + 870 = (-4x + 6) + 2x^2$$

$$3x^2 - 2x^2 - 63x + 4x + 864 = 0$$

$$x^2 - 59x + 864 = 0$$

$$x^2 - 27x - 32x + 864 = 0$$

$$x(x - 27) - 32(x - 27) = 0$$

$$(x - 27)(x - 32) = 0$$

$$x = 27 \text{ and } 32$$



From II

$$(3y^2 - 71y - 2) = (-1220 + 2y^2)$$

$$(3y^2 - 2y^2) - 71y + 1218 = 0$$

$$y^2 - 71y + 1218 = 0$$

$$y^2 - 42y - 29y + 1218 = 0$$

$$y(y - 42) - 29(y - 42) = 0$$

$$(y - 42)(y - 29) = 0$$

$$y = 42 \text{ and } 29$$

By using the smaller root of equation I and the larger root of equation II formed a quadratic equation

By checking the options.

From Option (a)

$$z^2 - 68z + 1107 = 0$$

$$z^2 - 41z - 27z + 1107 = 0$$

$$z(z - 41) - 27(z - 41) = 0$$

$$(z - 41)(z - 27) = 0$$

$$z = 41 \text{ and } 27$$

So, Option (a) is not satisfied

From Option (b)

$$z^2 - 69z + 1134 = 0$$

$$z^2 - 42z - 27z + 1134 = 0$$

$$z(z - 42) - 27(z - 42) = 0$$

$$(z - 42)(z - 27) = 0$$

$$z = 42 \text{ and } 27$$

So, Option (b) is satisfied

From Option (c)

$$z^2 - 70z + 1176 = 0$$

$$z^2 - 42z - 28z + 1176 = 0$$

$$z(z - 42) - 28(z - 42) = 0$$

$$(z - 42)(z - 28) = 0$$

$$z = 42 \text{ and } 28$$

So, Option (c) is not satisfied

From Option (d)

$$z^2 - 71z + 1204 = 0$$

$$z^2 - 43z - 28z + 1204 = 0$$

$$z(z - 43) - 28(z - 43) = 0$$

$$(z - 43)(z - 28) = 0$$

$$z = 43 \text{ and } 28$$

So, Option (d) is not satisfied

From Option (e)

$$z^2 - 68z + 1120 = 0$$

$$z^2 - 40z - 28z + 1120 = 0$$

$z(z - 40) - 28(z - 40) = 0$
 $(z - 40)(z - 28) = 0$
 $z = 40 \text{ and } 28$
 So, Option (e) is not satisfied

87) Answer

From equation I,
 $X^2 - 6X - 432 = 0$
 $X^2 - 24X + 18X - 432 = 0$
 $X(X - 24) + 18(X - 24) = 0$
 $(X - 24)(X + 18) = 0$
 $X = 24 \text{ and } -18$
 From equation II,
 $Y^2 - 18Y - 448 = 0$
 $Y^2 - 32Y + 14Y - 448 = 0$
 $Y(Y - 32) + 14(Y - 32) = 0$
 $(Y - 32)(Y + 14) = 0$
 $Y = 32 \text{ and } -14$
 According to the condition,
 $24m - 18n = 60 \text{ ---(1)}$
 $32m - 14n = 220 \text{ ---(2)}$
 $4 * (1) \text{ and } 3 * (2),$
 $96m - 72n = 240$
 $96m - 42n = 660$
 $30n = 420$
 $n = 14$
 Put a value of n in equation ()
 $24m - 18 * 14 = 60$
 $24m = 312$
 $m = 13$
 Thus, $m < n$.

88) Answer

From equation I,
 $(X - 16)/3 = 187/X$
 $X(X - 16)/3 = 187$
 $(X^2 - 16X)/3 = 187$
 $X^2 - 16X = 561$
 $X^2 - 16X - 561 = 0$
 $X^2 - 33X + 17X - 561 = 0$
 $X(X - 33) + 17(X - 33) = 0$
 $(X - 33)(X + 17) = 0$



$$X = 33 \text{ and } -17$$

From equation II,

$$(Y - 2)/3 + 207/Y = 16$$

$$Y(Y - 2)/3 + 207 = 16Y$$

$$(Y^2 - 2Y)/3 + 207 = 16Y$$

$$Y^2 - 2Y + 621 = 48Y$$

$$Y^2 - 2Y - 48Y + 621 = 0$$

$$Y^2 - 50Y + 621 = 0$$

$$Y^2 - 27Y - 23Y + 621 = 0$$

$$Y(Y - 27) - 23(Y - 27) = 0$$

$$(Y - 27)(Y - 23) = 0$$

$$Y = 27 \text{ and } 23$$

According to the condition,

$$33m - 17n = 208 \text{ ---(1)}$$

$$27m + 23n = 650 \text{ ---(2)}$$

$$9 * (1) \text{ and } 11 * 2,$$

$$297m - 153n = 1872$$

$$297m + 253n = 7150$$

$$406n = 5278$$

$$n = 13$$

Put a value of 'n' in equation (1),

$$33m - 17 * 13 = 208$$

$$33m - 221 = 208$$

$$33m = 429$$

$$m = 13$$

$$\text{Thus, } m = n$$

89) Answer

$$\text{III. } 17a - 9b = 22$$

$$\text{III} * 8 \rightarrow 136a - 72b = 176 \text{(i)}$$

$$\text{IV. } 4a + 8b = 76$$

$$\text{IV} * 9 \rightarrow 36a + 72b = 684 \text{(ii)}$$

Adding (i) and (ii),

$$172a = 860$$

$$a = 5$$

$$b = 7$$

$$\text{I. } x^2 - (8\sqrt{a})x + 75 = 0$$

$$x^2 - 8\sqrt{5}x + 75 = 0$$

$$x^2 - 3\sqrt{5}x - 5\sqrt{5}x + 75 = 0$$

$$x(x - 3\sqrt{5}) - 5\sqrt{5}(x - 3\sqrt{5}) = 0$$

$$(x - 3\sqrt{5})(x - 5\sqrt{5}) = 0$$

$$x = 3\sqrt{5}, 5\sqrt{5}$$



$$\begin{aligned} \text{II. } y^2 - 252 &= (13\sqrt{b})y \\ y^2 - 13\sqrt{7}y - 252 &= 0 \\ y^2 - 9\sqrt{7}y - 4\sqrt{7}y - 252 &= 0 \\ y(y - 9\sqrt{7}) - 4\sqrt{7}(y + 9\sqrt{7}) &= 0 \\ (y - 4\sqrt{7})(y + 9\sqrt{7}) &= 0 \\ y &= 4\sqrt{7}, -9\sqrt{7} \end{aligned}$$

90) Answer

To find 'a':

$$\begin{aligned} 2x^2 - 10x + 8 &= 0 \\ 2x^2 - 8x - 2x + 8 &= 0 \\ 2x(x - 4) - 2(x - 4) &= 0 \\ (2x - 2)(x - 4) &= 0 \\ x = 1 \text{ (or) } x &= 4 \\ a = (1 + 4)^2 &= 5^2 \\ a &= 25 \end{aligned}$$

To find 'b':

$$\begin{aligned} 3x^2 - 22x + 35 &= 2x^2 - 10x \\ x^2 - 12x + 35 &= 0 \\ x^2 - 7x - 5x + 35 &= 0 \\ x(x - 7) - 5(x - 7) &= 0 \\ (x - 5)(x - 7) &= 0 \\ x = 5 \text{ (or) } x &= 7 \\ b = 7^2 - 5^2 &= 49 - 25 \\ b &= 24 \\ \text{So, } a > b \end{aligned}$$

91) Answer

From I

$$\begin{aligned} x^2 - ax + (b - 3) &= 0 \\ \text{Substituting one of the root values of 4 in place of } x & \\ 4^2 - 4a + b - 3 &= 0 \\ 4a - b = 13 &\text{----- (1)} \end{aligned}$$

From II

$$\begin{aligned} y^2 - (a + 1)y + b &= 0 \\ \text{Substituting one of the root values 5 in place of } y & \\ 5^2 - (a + 1) * 5 + b &= 0 \\ 25 - 5a - 5 + b &= 0 \\ 5a - b = 20 &\text{----- (2)} \end{aligned}$$

Solving equations (1) and (2), we get

$$a = 7, b = 15$$

Substituting the values of a and b in I



$$x^2 - ax + (b - 3) = 0$$

$$x^2 - 7x + (15 - 3) = 0$$

$$x^2 - 7x + 12 = 0$$

$$x^2 - 3x - 4x + 12 = 0$$

$$x(x - 3) - 4(x - 3) = 0$$

$$(x - 3)(x - 4) = 0$$

$$x = 3 \text{ (or) } x = 4$$

So, the value of $p = 3$

From III

$$z^2 - 10z + 21 = 0$$

$$z^2 - 7z - 3z + 21 = 0$$

$$z(z - 7) - 3(z - 7) = 0$$

$$(z - 3)(z - 7) = 0$$

$$z = 3 \text{ (or) } z = 7$$

By checking Statement 1

One of the roots of III is equal to the value of p

Roots of III = 3, 7

Value of $p = 3$

So, the statement I follows

By checking Statement II

The product of the roots of II is less than the product of the roots of III

Roots of II = 5, 3

Product of the roots of II = 15

Roots of III = 3, 7

Product of the roots of III = 21

So, Statement II follows

Option 3

One of the roots of III is greater than $(b - a)$

Roots of III = 3, 7

$$(b - a) = 15 - 7 = 8$$

So, statement 3 does not follows

Hence, Statement 1 and 2 follows

92) Answer

$$\text{I: } x - 68\sqrt{x} + 480 = 0$$

Let us consider, $\sqrt{x} = a$

$$a^2 - 68a + 480 = 0$$

$$a^2 - 60a - 8a + 480 = 0$$

$$a(a - 60) - 8(a - 60) = 0$$

$$(a - 8)(a - 60) = 0$$

$$a = 8, 60$$

$$\sqrt{x} = 8, 60$$



$$x = 8^2, 60^2$$

$$x = 64, 3600$$

$$\text{II: } y - 60\sqrt{y} - 256 = 0$$

Let us consider, $\sqrt{y} = b$

$$b^2 - 60b - 256 = 0$$

$$b^2 - 64b + 4b - 256 = 0$$

$$b(b - 64) + 4(b - 64) = 0$$

$$(b + 4)(b - 64) = 0$$

$$b = -4, 64$$

$$\sqrt{y} = -4, 64$$

$$\text{or } y = -4^2 \text{ and } y = 64^2$$

$$y = 16, 4096$$

Statement 1: The maximum value of x is divisible by the minimum value of y .

$$\text{Maximum value of } x = 3600$$

$$\text{Minimum value of } y = 16$$

$$\text{And } 3600/16 = 225$$

The Maximum value of x is divisible by the minimum value of y .

statement 1 is correct.

Statement 2: One of the roots of equations I and II is the same.

This statement is wrong because none of the roots is the same.

Statement 3: The maximum value of y is the square of the minimum value of x .

$$\text{Maximum value of } y = 4096$$

$$\text{Minimum value of } x = 64$$

$$\text{Square of minimum value of } x = 64^2 = 4096$$

statement 3 is correct.

Statements 3 and 1 are correct.

93) Answer

$$\text{I: } x^n + 2x^{n-1} + 1 = 0$$

$$\text{Let us consider } x^{n-1} = a$$

$$x^n + 2x^{n-1} + 1 = a^2 + 2a + 1 = 0$$

$$a = -1$$

$$x^{n-1} = -1$$

$$x = (-1)^{1/(n-1)} \text{ when } n \text{ is odd.}$$

$$x = -1, \text{ when } n \text{ is even.}$$

$$\text{II: } y^n - 2y^{n-1} + 1 = 0$$

$$\text{Let us consider } y^{n-1} = a$$

$$y^n - 2y^{n-1} + 1 = a^2 - 2a + 1 = 0$$

$$a = 1$$

$$y^{n-1} = 1$$

$$y = 1, \text{ for any value of } n.$$

Statement 1: n is an even number, then the roots are equal.



$x = -1$ when n is even.

$y = 1$

So, x is not equal to y .

Statement 1 is not correct.

Statement 2: n is an even number, then $y > x$.

$x = -1$ when n is even.

$y = 1$

$y > x$

Statement 2 is correct.

Statement 3: If n is an odd number which is greater than 1, then the value of x is not a real number.

$x = (-1)^{1/(n-1)}$ when n is odd.

For $n = 3$, $x = (-1)^{1/2}$

$x = i$, it is an imaginary number.

which will not give a real number.

Statement 3 is correct.

Statements 2 and 3 are correct.

94) Answer

I: $25y^2 - 120y + 144 = 0$

$(5y)^2 - 2 * 5y * 12 + 12^2 = 0$

$(5y - 12)^2 = 0$

$y = 12/5, 12/5$

II: $25x^2 + 170x + 289 = 0$

$(5x)^2 + 2 * 5x * 17 + 17^2 = 0$

$(5x + 17)^2 = 0$

$x = -17/5, -17/5$

Statement 1: The sum of one of the roots x and y is an integer.

$x + y = (-17/5) + (12/5) = (-5/5) = -1$, which is an integer.

Therefore, statement 1 is correct.

Statement 2: The sum of the 5 times the one of the roots of x and 5 times the one of the roots of y gives -5 .

$5 * x = 5 * (-17/5) = -17$

$5 * y = 5 * (12/5) = 12$

Required sum $= -17 + 12 = -5$

statement 2 is correct.

Statement 3: The values of x and y lie between 0 to 5.

$y = 12/5 = 2.4$, which lies in between 0 and 5.

$x = -17/5 = -3.4$, which does not lie between 0 and 5.

statement 3 is not correct.

Statements 2 and 1 are correct.



95) Answer

$$I: 13y^2 - 12y + 244 = (2y + 12)^2$$

$$9y^2 - 60y + 100 = 0$$

$$(3y)^2 - 2 * 3y * 10 + 10^2 = 0$$

$$(3y - 10)^2 = 0$$

$$(3y - 10)(3y - 10) = 0$$

$$y = 10/3, 10/3$$

$$II: (x^2 - 16x + 64)(x^2 + 16x + 64) = 1296$$

$$(x - 8)^2 (x + 8)^2 = 1296$$

$$(x - 8)(x + 8) = 36$$

$$(x^2 - 8^2) = 36$$

$$x^2 - 64 = 36$$

$$x^2 = 100$$

$$x = \pm 10$$

Statement 1: The value of y lies in between the maximum and minimum value of x.

y = 10/3 lies in between the minimum value of x i.e. -10 and the maximum value of x i.e. 10.

statement 1 is correct.

Statement 2: The one-third of the maximum value of x is equal to the value of y.

One-third of the maximum value of x = 10 * (1/3) = 10/3

$$y = 10/3$$

statement 2 is correct.

Statement 3: The sum of the maximum and minimum values of x is 0.

Maximum value of x = 10

Minimum value of x = - 10

Sum of maximum and minimum value = - 10 + 10 = 0

statement 3 is correct.

All the statements are correct.

96) Answer

$$A. x^2 + 6x - 315 = 0$$

$$x^2 - 15x + 21x - 315 = 0$$

$$x(x - 15) + 21(x - 15) = 0$$

$$(x + 21)(x - 15) = 0$$

$$x = -21 \text{ (or) } x = 15$$

So, none of the options - follows

$$B. y^2 - 11y - 350 = 0$$

$$y^2 + 14y - 25y - 350 = 0$$

$$y(y + 14) - 25(y + 14) = 0$$

$$(y - 25)(y + 14) = 0$$

$$y = 25 \text{ (or) } y = -14$$

So, (F) One of the roots is the square of a prime number - follows



$$C. z^2 - 49z + 580 = 0$$

$$z^2 - 29z - 20z + 580 = 0$$

$$z (z - 29) - 20 (z - 29) = 0$$

$$(z - 20) (z - 29) = 0$$

$$z = 20 \text{ (or) } z = 29$$

So, (D) Sum of the roots is the square of a number - follows

97) Answer

$$A. x^2 - 5x - 84 = 0$$

$$x^2 - 12x + 7x - 84 = 0$$

$$x (x - 12) + 7 (x - 12) = 0$$

$$(x + 7) (x - 12) = 0$$

$$x = -7 \text{ (or) } x = 12$$

So, (D) one of the roots is greater than 10 - follows

$$B. y^2 - 19y + 88 = 0$$

$$y^2 - 11y - 8y + 88 = 0$$

$$y (y - 11) - 8 (y - 11) = 0$$

$$(y - 8) (y - 11) = 0$$

$$y = 8 \text{ (or) } y = 11$$

So, (D) one of the roots is greater than 10 - follows

$$C. z^2 - 16z + 63 = 0$$

$$z^2 - 7z - 9z + 63 = 0$$

$$z (z - 7) - 9 (z - 7) = 0$$

$$(z - 9) (z - 7) = 0$$

$$z = 9 \text{ (or) } z = 7$$

So, (E) One of the roots is a square of a number - follows

98) Answer

$$A. 3x^2 + 7x - 20 = 0$$

$$3x^2 + 12x - 5x - 20 = 0$$

$$3x (x + 4) - 5 (x + 4) = 0$$

$$(3x - 5) (x + 4) = 0$$

$$x = 5/3 \text{ (or) } x = -4$$

So, none of the options follows

$$B. 2y^2 - 17y + 35 = 0$$

$$2y^2 - 10y - 7y + 35 = 0$$

$$2y (y - 5) - 7 (y - 5) = 0$$

$$(2y - 7) (y - 5) = 0$$

$$y = 7/2 \text{ (or) } y = 5$$

So, (D) one of the roots is a prime number - follows

$$C. z^2 - 5z - 36 = 0$$

$$z^2 - 9z + 4z - 36 = 0$$



$$z(z - 9) + 4(z - 9) = 0$$

$$(z + 4)(z - 9) = 0$$

$$z = -4 \text{ (or) } z = 9$$

So, (E) Difference between the square of one of the roots and 35 is 46 - follows

99) Answer

$$A. x^2 - 29x + 204 = 0$$

$$x^2 - 17x - 12x + 204 = 0$$

$$x(x - 17) - 12(x - 17) = 0$$

$$(x - 12)(x - 17) = 0$$

$$x = 12 \text{ (or) } x = 17$$

So, (E) One of the roots is a prime number – follows

$$B. y^2 + 2y - 195 = 0$$

$$y^2 + 15y - 13y - 195 = 0$$

$$y(y + 15) - 13(y + 15) = 0$$

$$(y - 13)(y + 15) = 0$$

$$y = 13 \text{ (or) } y = -15$$

So (E) One of the roots is a prime number – follows

$$C. z^2 + z - 90 = 0$$

$$z^2 + 10z - 9z - 90 = 0$$

$$z(z + 10) - 9(z + 10) = 0$$

$$(z - 9)(z + 10) = 0$$

$$z = 9 \text{ (or) } z = -10$$

So, (F) One of the roots divisible by 3 will be a prime number - follows

100) Answer

W.K.T

$$ax^2 + bx + c = 0$$

where,

sum of the roots = $-b/a$

$$A. x^2 - 25x + P = 0, \text{ where } a \text{ and } b \text{ are the roots of the equation and } (a - b) = 7$$

$$a + b = 25 \text{ ----- (1)}$$

$$a - b = 7 \text{ ----- (2)}$$

From (1) & (2)

$$a = 16, b = 8$$

So, (E) One of the roots divided by 2 is the cube of a number - follows

$$B. y^2 + 12y + Q = 0, \text{ where } c \text{ and } d \text{ are the roots of the equation and } (c - d) = -26$$

Now,

$$c + d = -12 \text{ ----- (3)}$$

$$c - d = -26 \text{ ----- (4)}$$

From (3) & (4)

$$c = -19, d = 7$$



None of the options - follows

C. $z^2 - 19z + R = 0$, where e and f are the roots of the equation and $(e - f) = 35$

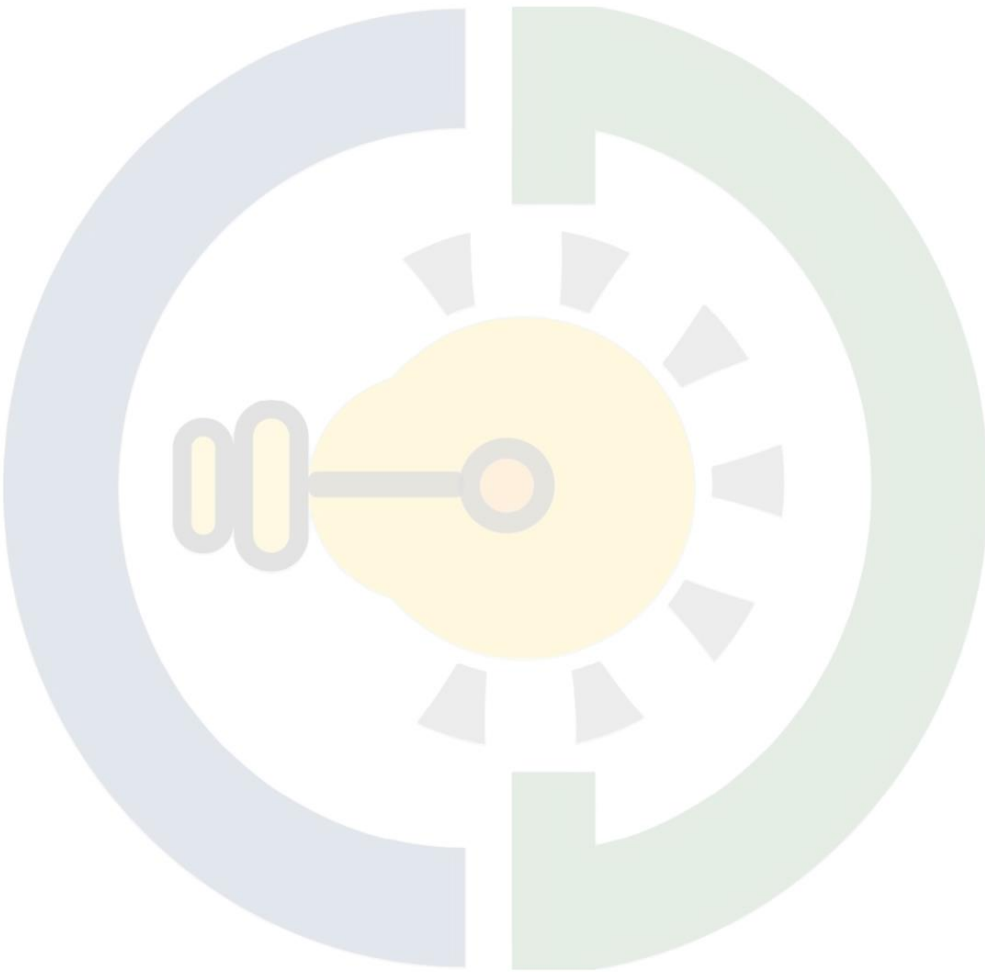
$e + f = 19$ ----- (1)

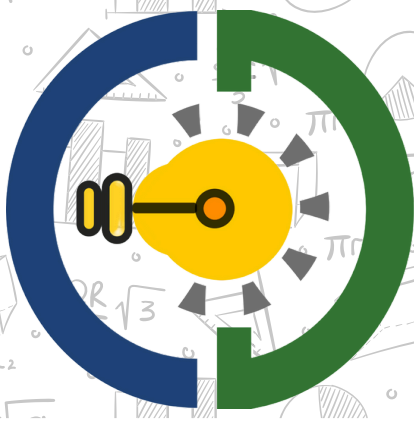
$e - f = 35$ ----- (2)

From (1) & (2)

$e = 27, f = -8$

So, (F) Sum of the roots is a prime number - follows





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Following question contains two equations as I and II. You have to solve both equations and determine the relationship between them:

निम्नलिखित प्रश्न में I और II के रूप में दो समीकरण हैं। आपको दोनों समीकरणों को हल करना होगा और उनके बीच संबंध निर्धारित करना होगा:

- 1) I. $x^2 - 23x - 248 = 0$
II. $y^2 + 3y - 1054 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 2) I. $2x^2 - 11x + 15 = 0$
II. $2y^2 - 5y + 3 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 3) I. $x^2 - 50x + 621 = 0$
II. $y^2 - y - 506 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 4) I. $(x + 2)! = 20 (x!)$
II. $y^2 + 25y + 156 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$





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e) $x = y$ or no relation

5) I. $3x^2 + 34x - 65 = 0$

II. $4y^2 - 55y + 84 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

6) I. $x^2 + 2x - 1088 = 0$

II. $y^2 + 3y - 1804 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

7) I. $7x^2 - 40x + 25 = 0$

II. $6y^2 + 37y - 35 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

8) I. $x^2 - 66x + 1089 = 0$

II. $y^2 - 27y - 160 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

9) I. $x^2 + 41x - 42 = 0$

II. $y^2 - 30y + 221 = 0$

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- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

10) I. $x^2 - 31x + 238 = 0$
II. $y^2 - 25y + 154 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

11) $2x^2 + 32x + 220 = 0$
 $y^2 + 17y + 72 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

12) $2x^2 - 23x + 60 = 0$
 $3y^2 - 17y + 20 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

13) $3x^2 - 10x + 7 = 0$
 $y^2 + 18y + 65 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$





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- d) $x \leq y$
e) $x = y$ or no relation

- 14) I. $2x^2 - 11x + 12 = 0$
II. $y^2 - 37y + 132 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 15) I. $x^2 + 15x - 1504 = 0$
II. $y^2 - 61y + 928 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 16) $x^2 + \sqrt{5776}x + 1419 = 0$
 $y^2 + \sqrt{7569}y + 1892 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

- 17) I. $3x^2 - 53x + 34 = 0$
II. $3y^2 + 43y - 30 = 0$
a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation





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18) $x^2 - (64)^{1/3}x - \sqrt{36864} = 0$

$y^2 - 44y + 459 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

19) $3x^2 - 13x + (38416)^{1/4} = 0$

II. $3y^2 - (65536)^{1/4}y + 21 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

20) I. $x^2 - 43x - 2618 = 0$

II. $y^2 + 69y + 1190 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

21) I. $4x^2 + 13x + 10 = 0$

II. $5y^2 + 14y + 8 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

22) I. $2x^2 - 4x - 30 = 0$

II. $5y^2 - 85y + 360 = 0$

- a) $x > y$
- b) $x < y$

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- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

23) I. $x^2 + 89x + 1474 = 0$
II. $y^2 - 35y - 1254 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

24) I. $(x + 5)^2 = \sqrt{4096}$
II. $y^2 - 34y + 93 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

25) I. $9x^2 - 18x + 8 = 0$
II. $4y^2 + 3y - 1 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

26) I. $2x^2 - 45x + 252 = 0$
II. $2y^2 - 41y + 182 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation





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27) I. $2x^2 + 21x - 98 = 0$

II. $2y^2 - 11y + 9 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

28) I. $13x^2 - 31x + 10 = 0$

II. $y^2 + 91y + 2064 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

29) I. $x^2 - 7.99x - 2384.8 = 0$

II. $y^2 + 93.89y + 2205.12 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

30) I. $15.87x^2 - 36.85x + 9.88 = 0$

II. $16.12y^2 + 10.9y - 5 = 0$

a) $x > y$

b) $x < y$

c) $x \geq y$

d) $x \leq y$

e) $x = y$ or no relation

31) I. $11x^4 = 3000\% \text{ of } 2^3 - 4x^4$

II. $8y^2 = \sqrt{(9^2 \times 8\% \text{ of } 800)}$

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- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

32) I. $x = \sqrt{(10^3 - 6^3)}$

II. $y = \sqrt[4]{38416}$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

33) I. $77/x^{5/6} - 13x^{-5/6} = x^{7/6}$

II. $y^2 = \sqrt{\{2^3 \% \text{ of } (30^2 - 10^2)\}}$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

34) I. $\frac{45}{x^2} + \frac{15}{x} - \frac{30}{x^2} = \frac{20}{x^2}$

II. $y^2 + 9.62 + 15.34 = 25.12$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

35) I. $\frac{17}{\sqrt{x}} - \frac{12}{\sqrt{x}} = x^{\frac{1}{2}}$

II. $y^8 - 25^4 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$





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- d) $x \leq y$
e) $x = y$ or no relation

36) I. $99x - 255\sqrt{x} + 150 = 0$

II. $63y - 194\sqrt{y} + 143 = 0$

- a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

37) I. $3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$

II. $9y^2 - (12 + 3\sqrt{17})y + 4\sqrt{17} = 0$

- a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

38) I. $x^{\frac{7}{5}} \div 16 = 121 \div x^{\frac{3}{5}}$

II. $y^{\frac{1}{4}} * y^{\frac{1}{4}} * 13 = 572 \div y^{\frac{1}{2}}$

- a) $x > y$
b) $x < y$
c) $x \geq y$
d) $x \leq y$
e) $x = y$ or no relation

39) I. $(5x^2 - 12) - (9x^2 - 16) = 0$

II. $(6y^2 + 17) - (3x^2 + 20) = 0$

- a) $x > y$
b) $x < y$





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- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

40) I. $9x - 18^2 = 4x - \sqrt[3]{2744} - 15^2$

II. $17y = 13^2 + \sqrt{196} + 5^2 + 4y$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

41) I. $361^{\frac{1}{2}}x^2 - 270 = 1269$

II. $169^{\frac{1}{2}}y + \sqrt{289} = 134$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

42) I. $\frac{x^3 + 5x^2 - 2x - 24}{x - 2} = 0$

II. $\frac{y^3 - 13y + 12}{y - 1} = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

43) I. $x^3 - \sqrt[3]{10648} = \sqrt{1764}$

II. $(\sqrt{y} - 2)\left(\frac{\sqrt{y}}{3} - 1\right) = 0$

- a) $x > y$
- b) $x < y$





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- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

44) I. $\sqrt{x} - \frac{15}{7^{\frac{1}{2}}x^2} = 0$

II. $\sqrt[3]{y} - \frac{14}{19^{\frac{1}{3}}y^2} = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

45) I. $17\sqrt[3]{x} = \frac{1}{5}(75 + 60\sqrt[3]{x})$

II. $y = (\sqrt[3]{\sqrt{64}})^5$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

46) I. $x^2 - 10\sqrt{3}x + 72 = 0$

II. $y^2 - 3\sqrt{5}y - 90 = 0$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

47) I. $(x + 2)(y + 3) = 12$

II. $2xy + 4x + 5y + 11^2 = 132$

- a) $x > y$
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- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

48) I. $\frac{x+2}{y+4} = \frac{x+5}{y+10}$

II. $\frac{3x-2}{y} = \frac{3x+6}{y+16}$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
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49) I. $x^{\frac{1}{3}} * x^{\frac{2}{3}} * 2730 = 14 * x^2$

II. $\left(\frac{y^4}{12}\right)^2 = \frac{256}{y^2}$

- a) $x > y$
- b) $x < y$
- c) $x \geq y$
- d) $x \leq y$
- e) $x = y$ or no relation

50) I. $0.42x^2 - 0.58x + 0.20 = 0$

II. $0.63y^2 - 1.20y + 0.33 = 0$

- f) $x > y$
- g) $x < y$
- h) $x \geq y$
- i) $x \leq y$
- j) $x = y$ or no relation





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SOLUTION

1) Answer E

$$x^2 - 23x - 248 = 0$$

$$(x - 31)(x + 8) = 0$$

$$x = 31, -8$$

$$y^2 + 3y - 1054 = 0$$

$$(y + 34)(y - 31) = 0$$

$$y = -34, 31$$

2) Answer A

$$2x^2 - 11x + 15 = 0$$

$$(2x - 5)(x - 3) = 0$$

$$x = 5/2, 3$$

$$2y^2 - 5y + 3 = 0$$

$$(2y - 3)(y - 1) = 0$$

$$y = 3/2, 1$$

3) Answer C

$$x^2 - 50x + 621 = 0$$

$$(x - 27)(x - 23) = 0$$

$$x = 27, 23$$

$$y^2 - y - 506 = 0$$

$$(y - 23)(y + 22) = 0$$

$$y = 23, -22$$

4) Answer A

$$(x + 2)! = 20 (x!)$$

$$(x + 2)(x + 1)x! = 20 (x!)$$

$$x^2 + 3x + 2 - 20 = 0$$

$$x^2 + 3x - 18 = 0$$

$$(x - 3)(x + 6) = 0$$

$$x = 3, -6$$

$$y^2 + 25y + 156 = 0$$

$$(y + 12)(y + 13) = 0$$

$$y = -12, -13$$

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5) Answer E

$$3x^2 + 34x - 65 = 0$$

$$(3x - 5)(x + 13) = 0$$

$$x = 5/3, -13$$

$$4y^2 - 55y + 84 = 0$$

$$(4y - 2)(y - 12) = 0$$

$$y = 2/3, 12$$

6) Answer E

$$x^2 + 2x - 1088 = 0$$

$$(x - 32)(x + 34) = 0$$

$$x = 32, -34$$

$$y^2 + 3y - 1804 = 0$$

$$(y - 41)(y + 44) = 0$$

$$y = 41, -44$$

7) Answer E

$$7x^2 - 40x + 25 = 0$$

$$(7x - 5)(x - 5) = 0$$

$$x = 5/7, 5$$

$$6y^2 + 37y - 35 = 0$$

$$(6y - 5)(y + 7) = 0$$

$$y = 5/6, -7$$

8) Answer A

$$x^2 - 66x + 1089 = 0$$

$$(x - 33)(x - 33) = 0$$

$$x = 33$$

$$y^2 - 27y - 160 = 0$$

$$(y + 5)(y - 32) = 0$$

$$y = -5, 32$$

9) Answer B

$$x^2 + 41x - 42 = 0$$

$$(x + 42)(x - 1) = 0$$

$$x = -42, 1$$

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$$y^2 - 30y + 221 = 0$$
$$(y - 17)(y - 13) = 0$$
$$y = 17, 13$$

10) Answer C

$$x^2 - 31x + 238 = 0$$
$$(x - 14)(x - 17) = 0$$
$$x = 14, 17$$

$$y^2 - 25y + 154 = 0$$
$$(y - 11)(y - 14) = 0$$
$$y = 11, 14$$

11) Answer B

$$x^2 + 32x + 220 = 0$$
$$(x + 22)(x + 10) = 0$$
$$x = -22, -10$$

$$y^2 + 17y + 72 = 0$$
$$(y + 8)(y + 9) = 0$$
$$y = -8, -9$$

12) Answer C

$$2x^2 - 23x + 60 = 0$$
$$(2x - 15)(x - 4) = 0$$
$$x = 15/2, 4$$

$$3y^2 - 17y + 20 = 0$$
$$(3y - 5)(y - 4) = 0$$
$$y = 5/3, 4$$

13) Answer A

$$3x^2 - 10x + 7 = 0$$
$$(3x - 7)(x - 1) = 0$$
$$x = 7/3, 1$$

$$y^2 + 17y + 72 = 0$$
$$(y + 5)(y + 13) = 0$$
$$y = -5, -13$$





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14) Answer D

$$2x^2 - 11x + 12 = 0$$

$$(2x - 3)(x - 4) = 0$$

$$x = 3/2, 4$$

$$y^2 - 37y + 132 = 0$$

$$(y - 4)(y - 33) = 0$$

$$y = 4, 33$$

15) Answer E

$$x^2 + 15x - 1504 = 0$$

$$(x + 47)(x - 32) = 0$$

$$x = -47, 32$$

$$y^2 - 61y + 928 = 0$$

$$(y - 32)(y - 29) = 0$$

$$y = 32, 29$$

16) Answer C

$$x^2 + \sqrt{5776}x + 1419 = 0$$

$$x^2 + 76x + 1419 = 0$$

$$(x+43)(x+33) = 0$$

$$x = -43, -33$$

$$y^2 + \sqrt{7569}y + 1892 = 0$$

$$y^2 + 87y + 1892 = 0$$

$$(y + 43)(y + 44) = 0$$

$$y = -43, -44$$

17) Answer C

$$3x^2 - 53x + 34 = 0$$

$$(3x - 2)(x - 17) = 0$$

$$x = 2/3, 17$$

$$3y^2 + 43y - 30 = 0$$

$$(3y - 2)(y + 15) = 0$$

$$y = 2/3, -15$$

18) Answer B

$$x^2 - (64)^{1/3}x - \sqrt{36864} = 0$$

$$x^2 - 4x - 192 = 0$$

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$$(x - 16)(x + 12) = 0$$
$$x = 16, -12$$

$$y^2 - 44y + 459 = 0$$
$$(y - 17)(y - 27) = 0$$
$$y = 17, 27$$

19) Answer D

$$3x^2 - 13x + (38416)^{1/4} = 0$$
$$(3x^2 - 13x + 14) = 0$$
$$(3x - 7)(x - 2) = 0$$
$$x = 7/3, 2$$

$$3y^2 - (65536)^{1/4}y + 21 = 0$$
$$3y^2 - 16y + 21 = 0$$
$$(3y - 7)(y - 3) = 0$$
$$y = 7/3, 3$$

20) Answer C

$$x^2 - 43x - 2618 = 0$$
$$(x - 77)(x + 34) = 0$$
$$x = 77, -34$$

$$y^2 + 69y + 1190 = 0$$
$$(y + 34)(y + 35) = 0$$
$$y = -34, -35$$

21) Answer E

$$4x^2 + 13x + 10 = 0$$
$$(4x + 5)(x + 2) = 0$$
$$x = -5/4, -2$$

$$5y^2 + 14y + 8 = 0$$
$$(5y + 4)(y + 2) = 0$$
$$y = -4/5, -2$$

22) Answer B

$$2x^2 - 4x - 30 = 0$$
$$x^2 - 2x - 15 = 0$$
$$(x - 5)(x + 3) = 0$$
$$x = 5, -3$$





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$$5y^2 - 85y + 360 = 0$$

$$y^2 - 17y + 72 = 0$$

$$(y - 8)(y - 9) = 0$$

$$y = 8, 9$$

23) Answer D

$$x^2 + 89x + 1474 = 0$$

$$(x + 67)(x + 22) = 0$$

$$x = -67, -22$$

$$y^2 - 35y - 1254 = 0$$

$$(y + 22)(y - 57) = 0$$

$$y = -22, 57$$

24) Answer D

$$(x + 5)^2 - \sqrt{4096} = 0$$

$$(x + 5)^2 = 64$$

$$(x + 5) = \pm 8$$

$$x = -13, 3$$

$$y^2 - 34y + 93 = 0$$

$$(y - 31)(y - 3) = 0$$

$$y = 31, 3$$

25) Answer A

$$9x^2 - 18x + 8 = 0$$

$$(3x - 2)(3x - 4) = 0$$

$$x = 2/3, 4/3$$

$$4y^2 + 3y - 1 = 0$$

$$(4y - 1)(y + 1) = 0$$

$$y = 1/4, -1$$

26) Answer E

$$2x^2 - 45x + 252 = 0$$

$$(2x - 21)(x - 12) = 0$$

$$x = 21/2, 12$$





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$$2y^2 - 41y + 182 = 0$$
$$(2y - 13)(y - 14) = 0$$
$$y = 13/2, 14$$

27) Answer E

$$2x^2 + 21x - 98 = 0$$
$$(2x - 7)(x + 14) = 0$$
$$x = 7/2, -14$$

$$2y^2 - 11y + 9 = 0$$
$$(2y - 9)(y - 1) = 0$$
$$y = 9/2, 1$$

28) Answer A

$$13x^2 - 31x + 10 = 0$$
$$(13x - 5)(x - 2) = 0$$
$$x = 5/13, 2$$

$$y^2 + 91y + 2064 = 0$$
$$(y + 43)(y + 48) = 0$$
$$y = -43, -48$$

29) Answer C

$$x^2 - 8x - 238 = 0$$
$$(x - 53)(x + 45) = 0$$
$$x = 53, -45$$

$$y^2 + 94y + 2205 = 0$$
$$(y + 45)(y + 49) = 0$$
$$y = -45, -49$$

30) Answer C

$$16x^2 - 37x + 10 = 0$$
$$(16x - 5)(x - 2) = 0$$
$$x = 5/16, 2$$

$$16y^2 + 11y - 5 = 0$$
$$(16y - 5)(y + 1) = 0$$
$$y = 5/16, -1$$

31) Answer E





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$$11x^4 = 3000\% \text{ of } 2^3 - 4x^4$$

$$11x^4 = 240 - 4x^4$$

$$11x^4 + 4x^4 = 240$$

$$15x^4 = 240$$

$$x^4 = 16$$

$$x = +2, -2$$

$$8y^2 = \sqrt{(9^2 \times 8\% \text{ of } 800)}$$

$$8y^2 = \sqrt{5184}$$

$$y^2 = 72/8$$

$$y = +3, -3$$

32) Answer E

$$x = \sqrt{(10^3 - 6^3)}$$

$$x = \sqrt{(1000 - 216)}$$

$$x = \sqrt{784}$$

$$x = +28, -28$$

$$y = \sqrt[4]{38416}$$

$$y = 14$$

33) Answer E

$$77/x^{5/6} - 13x^{-5/6} = x^{7/6}$$

$$\frac{77}{x^{5/6}} - \frac{13}{x^{5/6}} = x^{7/6}$$

$$\frac{77 - 13}{x^{5/6}} = x^{7/6}$$

$$\frac{64}{x^{5/6}} = x^{7/6}$$

$$64 = x^{7/6} \times x^{5/6}$$

$$x^{7/6 + 5/6} = 64$$

$$x^{12/6} = 64$$

$$x^2 = 64$$

$$x = \pm 8$$

$$y = \sqrt{2^3 \% \text{ of } (30^2 - 10^2)}$$

$$y = \sqrt{8 \% \text{ of } (900 - 100)}$$

$$y = \sqrt{8 \% \text{ of } 800}$$

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$$y = \sqrt{64}$$
$$y = \pm 8$$

34) Answer E

$$\frac{45}{x^2} + \frac{15}{x} - \frac{30}{x^2} = \frac{20}{x^2}$$
$$\frac{(45 + 15x - 30)}{x^2} = \frac{20}{x^2}$$

$$45 + 15x - 30 = 20$$

$$15x = 20 - 45 + 30$$

$$15x = 5$$

$$x = 1/3$$

$$y^2 + 9.62 + 15.34 = 25.12$$

$$y^2 = 25.12 - 9.62 - 15.34$$

$$y^2 = 0.16$$

$$y = \pm 0.4$$

35) Answer C

$$\frac{17}{\sqrt{x}} - \frac{12}{\sqrt{x}} = \frac{1}{x^2}$$
$$\frac{17 - 12}{\sqrt{x}} = \sqrt{x}$$

$$x = 5$$

$$y^8 - 25^4 = 0$$

$$y^8 = 25^4$$

$$y^2 = 25$$

$$y = \pm 5$$

36) Answer E

$$99x - 255\sqrt{x} + 150 = 0$$

$$(11\sqrt{x} - 10)(9\sqrt{x} + 15) = 0$$

$$x = \frac{100}{121}, \frac{225}{81}$$

$$63y - 194\sqrt{y} + 143 = 0$$

$$(7\sqrt{y} - 13)(9\sqrt{y} - 11) = 0$$

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$$y = \frac{169}{49}, \frac{121}{81}$$

37) Answer C

$$3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$$

$$3x^2 - 6x - \sqrt{17}x + 2\sqrt{17} = 0$$

$$3x(x - 2) - \sqrt{17}(x - 2) = 0$$

$$(3x - \sqrt{17})(x - 2) = 0$$

$$x = 2, \frac{\sqrt{17}}{3}$$

$$9y^2 - (12 + 3\sqrt{17})y + 4\sqrt{17} = 0$$

$$9y^2 - 12y - 3\sqrt{17}y + 4\sqrt{17} = 0$$

$$3y(3y - 4) - \sqrt{17}(3y - 4) = 0$$

$$(3y - \sqrt{17})(3y - 4) = 0$$

$$x = \frac{4}{3}, \frac{\sqrt{17}}{3}$$

38) Answer D

$$x^{\frac{7}{5}} \div 16 = 121 \div x^{\frac{3}{5}}$$

$$x^{\frac{7+3}{5}} = 121 * 16$$

$$x^2 = 121 * 16$$

$$x = \pm 44$$

$$y^{\frac{1}{4}} * y^{\frac{1}{4}} * 13 = 572 \div y^{\frac{1}{2}}$$

$$y^{\frac{1}{4}} * y^{\frac{1}{4}} * y^{\frac{1}{2}} = \frac{572}{13}$$

$$y = 44$$

39) Answer E

$$(5x^2 - 12) - (9x^2 - 16) = 0$$

$$4x^2 = 4$$

$$x = \pm 1$$

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$$(6y^2 + 17) - (3x^2 + 20) = 0$$
$$3y^2 = 3$$
$$y = \pm 1$$

40) Answer A

$$9x - 18^2 = 4x - \sqrt[3]{2744} - 15^2$$
$$x = \frac{85}{5}$$
$$x = 17$$

$$17y = 13^2 + \sqrt{196} + 5^2 + 4y$$
$$13y = 208$$
$$y = \frac{208}{13} = 16$$

41) Answer D

$$361^{\frac{1}{2}}x^2 - 270 = 1269$$
$$19x^2 = 1269 + 270$$
$$19x^2 = 1539$$
$$x^2 = \frac{1539}{19} = 81$$
$$x = \pm 9$$

$$169^{\frac{1}{2}}y + \sqrt{289} = 134$$
$$13y = 134 - 17$$
$$y = \frac{117}{13} = 9$$

42) Answer E

$$\frac{x^3 + 5x^2 - 2x - 24}{x - 2} = 0$$
$$\frac{x^3 + 7x^2 - 2x^2 - 14x + 12x - 24}{x - 2} = 0$$
$$\frac{\{(x - 2)(x^2 + 7x + 12)\}}{x - 2} = 0$$
$$x^2 + 7x + 12 = 0$$
$$(x + 4)(x + 3) = 0$$
$$x = -4, -3$$





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$$\frac{y^3 - 13y + 12}{y - 1} = 0$$

$$\frac{\{y(y^2 - 1) - 12(y - 1)\}}{y - 1} = 0$$

$$y^2 + y - 12 = 0$$

$$(y - 3)(y + 4) = 0$$

$$y = 3, -4$$

43) Answer B

$$x^3 - \sqrt[3]{10648} = \sqrt{1764}$$

$$x^3 = 42 + 22$$

$$x^3 = 64$$

$$x = 4$$

$$(\sqrt{y} - 2)\left(\frac{\sqrt{y}}{3} - 1\right) = 0$$

$$y = 9, 4$$

44) Answer B

$$\sqrt{x} - \frac{7^{\frac{15}{2}}}{x^2} = 0$$

$$x^{\frac{5}{2}} = 7^{\frac{15}{2}}$$

$$x = 7^3$$

$$x = 343$$

$$\sqrt[3]{y} - \frac{19^{\frac{14}{3}}}{y^2} = 0$$

$$y^{\frac{7}{3}} = 19^{\frac{14}{3}}$$

$$y = 19^2$$

$$y = 361$$

45) Answer B

$$17\sqrt[3]{x} = \frac{1}{5}(75 + 60\sqrt[3]{x})$$

$$17\sqrt[3]{x} = 15 + 12\sqrt[3]{x}$$

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$$5\sqrt[3]{x} = 15$$

$$\sqrt[3]{x} = 3$$

$$x = 27$$

$$y = \left(\sqrt[3]{\sqrt{64}}\right)^5$$

$$y = 64^{5 \times \frac{1}{6}}$$

$$y = 32$$

46) Answer E

$$x^2 - 10\sqrt{3}x + 72 = 0$$

$$x^2 - 6\sqrt{3}x - 4\sqrt{3}x + 72 = 0$$

$$x(x - 6\sqrt{3}) - 4\sqrt{3}(x - 6\sqrt{3}) = 0$$

$$(x - 6\sqrt{3})(x - 4\sqrt{3}) = 0$$

$$x = 6\sqrt{3}, 4\sqrt{3}$$

$$y^2 - 3\sqrt{5}y - 90 = 0$$

$$y^2 - 6\sqrt{5}y + 3\sqrt{5}y - 90 = 0$$

$$y(y - 6\sqrt{5}) + 3\sqrt{5}(y - 6\sqrt{5}) = 0$$

$$(y - 6\sqrt{5})(y + 3\sqrt{5}) = 0$$

$$y = 6\sqrt{5}, 3\sqrt{5}$$

47) Answer E

$$(x + 2)(y + 3) = 12$$

$$xy + 3x + 2y + 6 = 12$$

$$xy + 3x + 2y = 6$$

$$2xy + 6x + 4y = 12 \text{ --- (i)}$$

$$2xy + 4x + 5y + 11^2 = 132$$

$$2xy + 5x + 4y = 11 \text{ --- (ii)}$$

From (i) and (ii)

$$x=1 \text{ and } y=1$$

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48) Answer B

$$\frac{x+2}{y+4} = \frac{x+5}{y+10}$$

$$xy + 10x + 2y + 20 = xy + 5y + 4x + 20$$

$$y = 2x \text{ --- (i)}$$

$$\frac{3x-2}{y} = \frac{3x+6}{y+16}$$

$$3xy + 48x - 2y - 32 = 3xy + 6y$$

$$48x - 8y = 32 \text{ --- (ii)}$$

from (i) and (ii)

$$x = 1 \text{ and } y = 2$$

49) Answer A

$$x^{\frac{1}{3}} * x^{\frac{2}{3}} * 2730 = 14 * x^2$$

$$x * 2730 = 14x^2$$

$$x = \frac{2730}{14} = 195$$

$$\left(\frac{y^{\frac{1}{4}}}{12}\right)^2 = \frac{256}{y^{\frac{3}{2}}}$$

$$\left(\frac{y^{\frac{1}{2}}}{144}\right) = \frac{256}{y^{\frac{3}{2}}}$$

$$y^2 = 144 * 256$$

$$y = \sqrt{144 * 256}$$

$$y = 12 * 16$$

$$y = \pm 192$$

50) Answer E

$$0.42x^2 - 0.58x + 0.20 = 0$$

$$42x^2 - 58x + 20 = 0$$

$$42x^2 - (30 + 28)x + 20 = 0$$

$$42x^2 - 30x - 28x + 20 =$$

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$$(7x - 5)(6x - 4) = 0$$

$$x = \frac{5}{7}, \frac{2}{3}$$

$$0.63y^2 - 1.20y + 0.33 = 0$$

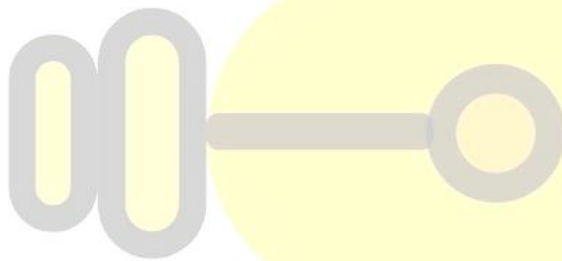
$$63y^2 - 120y + 33 = 0$$

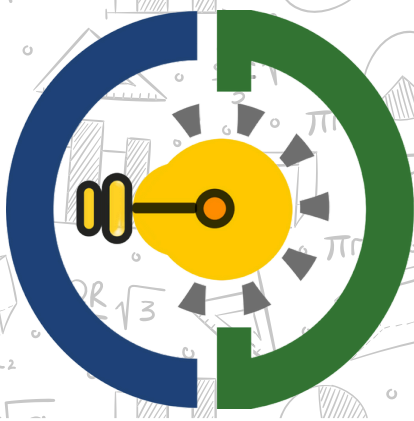
$$63y^2 - 99y - 21y + 33 = 0$$

$$9y(7y - 11) - 3(7y - 11) = 0$$

$$(7y - 11)(9y - 3) = 0$$

$$y = \frac{11}{7}, \frac{1}{3}$$





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Top 100 Quadratic Equation



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Directions: In each of these questions, two or three equations will be given. You have to solve the given equations and answer the following questions.

निर्देश: इनमें से प्रत्येक प्रश्न में दो या तीन समीकरण दिये जायेंगे। आपको दिए गए समीकरणों को हल करना है और निम्नलिखित प्रश्नों के उत्तर देने हैं।

1) (I) $x^2 - 10x - 24 = 0$

(II) $y^2 + 4y + 4 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

2) (I) $x^2 - 5x + 6 = 0$

(II) $y^2 - 8y + 15 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

3) (I) $x^2 - 8x + 15 = 0$

(II) $y^2 + y - 12 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

4) (I) $x^2 + 16x + 64 = 0$

(II) $y^2 + 15y + 26 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

5) (I) $x^2 - 13x - 90 = 0$

(II) $y^2 + 6y - 91 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined





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d) $x < y$

e) $x \leq y$

6) (I) $2x^2 - x - 1 = 0$

(II) $2y^2 - 4y + 2 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

7) (I) $x^2 + 33x + 260 = 0$

(II) $y^2 + 11y - 26 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

8) (I) $x^2 - 10x - 24 = 0$

(II) $y^2 + 4y + 4 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

9) (I) $x^2 - 10x - 24 = 0$

(II) $y^2 + 4y + 4 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

10) (I) $x^2 - 10x - 24 = 0$

(II) $y^2 + 4y + 4 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$





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11) (I) $x^2 - 22x + 117 = 0$

(II) $y^2 - 24y + 143 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

12) (I) $x^2 - x = 56 = 0$

(II) $y^2 - 19y + 90 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

13) (I) $3x^2 + 30x + 63 = 0$

(II) $y^2 - 4y - 21 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

14) (I) $x^2 + 23x + 130 = 0$

(II) $y^2 + 32y + 120 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

15) (I) $30x^2 - 11x + 1 = 0$

(II) $15y^2 - 8y + 1 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

16) (I) $x^2 + 15x - 184 = 0$

(II) $y^2 - 30y + 176 = 0$

- a) $x > y$
- b) $x \geq y$





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- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

17) (I) $9x^2 - 26x + 16 = 0$

(II) $y^2 - 16y + 20 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

18) (I) $56x^2 - 1x = 1$

(II) $15y^2 + 8y + 1 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

19) (I) $2x^2 - 18x + 36 = 0$

(II) $y^2 - 12y + 32 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

20) (I) $2x^2 - 50x + 300 = 0$

(II) $y^2 - 30y + 224 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

21) (I) $12x^2 + 7x + 1 = 0$

(II) $48y^2 + 14y + 1 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$





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22) (I) $2x^2 - 40x + 128 = 0$

(II) $y^2 - 40y + 396 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

23) (I) $3x^2 - 2x = 0$

(II) $3y^2 + 5y + 2 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

24) (I) $3x^2 + 14x + 15 = 0$

(II) $5y^2 + 20y + 15 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

25) (I) $7x^2 = 8x$

(II) $\{y - 15\}^2 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

26) (I) $x^4 = 1296$

(II) $y^3 = 216$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

27) (I) $x^3 = 9261$

(II) $y^2 - 39y + 378 = 0$

- a) $x > y$





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- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

28) (I) $x - \sqrt{169} = 0$ (II) $y^2 - 169 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

29) (I) $x^2 - 361 = 0$ (II) $y^3 = 6859$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

30) (I) $x^2 - 144 = 0$ (II) $y^3 - 1728 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

31) (I) $2x + 5y - \sqrt{2601} = 0$ (II) $7x + 3y - 77 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

32) (I) $4x + 5y = 94$ (II) $5x - 3y = 25$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$





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e) $x \leq y$

33) (I) $x^2 = 11x$ (II) $y^2 - 21y + 110 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

34) (I) $5x^2 - 16x + 11 = 0$ (II) $5y^2 - 3y = 2$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

35) (I) $x^2 + 189 = 310$ (II) $y^2 - 12y + 11 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

36) (I) $2x + y - 20 = 0$ (II) $y^2 - 21 = \sqrt{1849}$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

37) (I) $4x + 3y = 52$ (II) $7x + 4y = 81$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

38) (I) $x^2 - 36 = 0$ (II) $y^3 - 27 = 0$





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- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

39) (I) $3x + 2y = 27$ (II) $4x - 3y = 2$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

40) (I) $x^2 + 57 = 2x^2 - 16x$ (II) $y^2 + 12y + 27 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

41) (I) $2x + 2y = 35$ (II) $4x - y = 25$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

42) (I) $2x + y = 34$ (II) $x + 3y = 47$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

43) (I) $16x^2 - 81 = 0$ (II) $64y^2 - 100 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined





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d) $x < y$

e) $x \leq y$

44) (I) $x^3 + 195x = 28x^2$

(II) $y^2 - 31y + 240 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

45) (I) $12x^2 - 41x + 35 = 0$

(II) $40y^2 + 93y + 54 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

46) (I) $x^2 + 37x + 340 = 0$

(II) $y^2 + 42y + 440 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

47) (I) $3x^2 - 36x + 60 = 0$

(II) $y^2 + 14y - 15 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$

48) (I) $x^2 - 28x + 192 = 0$

(II) $y^2 - 29y + 208 = 0$

a) $x > y$

b) $x \geq y$

c) $x = y$ or relationship can't be determined

d) $x < y$

e) $x \leq y$





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49) (I) $x^2 - 41x + 420 = 0$

(II) $y^2 + 5y - 500 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

50) (I) $x^2 + 19x + 90 = 0$

(II) $14y^2 - 37y + 24 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

51) (I) $12x^2 - 41x + 34 = 0$

(II) $3y^2 - 30y + 63 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

52) (I) $8x^2 - 22x + 15 = 0$

(II) $3y^2 - 13y + 14 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

53) (I) $6x^2 - 13x - 19 = 0$

(II) $14y^2 + 27y + 9 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

54) (I) $3x^2 - 18x + 24 = 0$

(II) $5y^2 = 30y - 40$

- a) $x > y$
- b) $x \geq y$





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- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

55) (I) $18x^2 - 73x + 35 = 0$

(II) $30y^2 - 89y + 63 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

56) (I) $30x^2 + 89x + 58 = 0$

(II) $27y^2 - 51y - 56 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

57) (I) $x^2 - 16x - 777 = 0$

(II) $y^2 - 77y + 1482 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

58) (I) $x^2 - 15\sqrt{5}x + 280 = 0$

(II) $y^2 - 19\sqrt{5}y + 440 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

59) (I) $x^2 - 9\sqrt{5}x + 100 = 0$

(II) $y^2 - 21\sqrt{3}y + 312 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$





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60) (I) $x^2 - 11\sqrt{2}x + 60 = 0$ (II) $y^2 - 7\sqrt{3}y + 36 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

61) (I) $x^2 + 7\sqrt{3}x + 15 = 0$ (II) $y^2 - 4\sqrt{3}y = 36$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

62) (I) $x^2 + 36\sqrt{3}x + 192 = 0$ (II) $2y^2 + 9\sqrt{3}y + 27 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

63) (I) $x^2 - 18.5x + 75 = 0$ (II) $2y^2 + 40y + 175.5 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

64) (I) $(x - 12)^2 + 81 = 6x$ (II) $(y + 8)^2 + 32 = 36y$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

65) (I) $x^2 - 5.9x + 8.4 = 0$ (II) $y^2 - 4.1y + 4 = 0$

- a) $x > y$





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- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

66) (I) $x^{\frac{3}{2}} - \frac{16}{\sqrt{x}} = 0$ (II) $\sqrt{36y^2} = \sqrt{7^2 + 24^2}$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

67) (I) $3x^2 - (6 + 4\sqrt{6})x + 8\sqrt{6} = 0$ (II) $2y^2 - (10 + 3\sqrt{3})y + 15\sqrt{3} = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

68) (I) $\frac{42}{\sqrt{x}} - \frac{6}{\sqrt{x}} = x^{\frac{3}{2}}$ (II) $y^3 = 512$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

69) (I) $\frac{1}{x^{\frac{1}{3}}} - \frac{1}{x^{\frac{2}{3}}} = 5x^{-\frac{2}{3}}$ (II) $y^2 + 12y + 35 = 0$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined
- d) $x < y$
- e) $x \leq y$

70) (I) $758 + x = 846 - 7^2$ (II) $y^2 = (1862 - 1726 + 2^3)$

- a) $x > y$
- b) $x \geq y$
- c) $x = y$ or relationship can't be determined





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d) $x < y$

e) $x \leq y$

71) Find the positive root of equation II and substitute it in equation I and find the value of 'y'?

I: $(13^2/y) + (173.25/x) = 7.375 \times 2$

II: $(14/x) - (735/x^2) = -1$

a) 26

b) 36

c) 28

d) 29

e) None of these

72) Find the value of 'c' in equation III.

I: $(348/\sqrt{x}) + (240/\sqrt{y}) = 44$

II: $(168/\sqrt{x}) - (288/\sqrt{y}) = -4$

III: $\sqrt{x} + \sqrt{y} - c = 0$

a) 28

b) 32

c) 40

d) 56

e) None of these

73) What is the value of the product of $(x^2 * y * \sqrt{6})$?

I: $(2/\sqrt{2})x + (1/\sqrt{3})y = 49/7$

II: $(1/\sqrt{2})x + (3/\sqrt{3})y = 132/12$

a) $72\sqrt{2}$

b) $72\sqrt{3}$

c) $72\sqrt{6}$

d) $72\sqrt{5}$

e) None of these

74) Find the root of equation III.

I: $(12/288)x + (1/1.6)y = 3.5 \times 5$

II: $(1/1.6)x + (4/80)y = 5.875 \times 5$

III: $\sqrt{y} * z^2 - 40z + 35 = 0$

a) 7 and 1

b) 5 and 6





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- c) 5.2 and 6
- d) 9.2 and 2.1
- e) None of these

75) Determine the value of a and b from the below given quadratic equations and find which of the following option is true.

I: $x^2 + 18x + 87 = (x + 9)^2 + a$

II: $4y^2 + 220 + 60y = (2y + 15)^2 - b$

- a) $a + b = 30$
- b) $a - b = 30$
- c) $a * b = 30$
- d) $a/b = 30$
- e) $a^2 + b = 30$

76) One of the roots in equation III is the difference of '(p - q)', Find the value of 'c'

I: $x^2 + 278 - 36x + p = (x - 18)^2$

II: $y^2 + 585 - 50y = (y - q)^2 - 40$

III: $z^2 + 18z - c = 0$

- a) 820
- b) 819
- c) 925
- d) 736
- e) None of these

77) Below given are two quadratic equations I and II.

I: $x^b + 18x = 73x - 148.8a$

II: $y^a = 128b * y$

The value of 'b' is the smallest prime number and one of the roots of equation I is 24.

Compare the roots of the quadratic equations.

- a) $x > y$
- b) $x < y$
- c) $x = y$ or no relation
- d) $x \geq y$
- e) $x \leq y$

78) Below given are two quadratic equations I and II.

I: $x^a - 8x^b = 384x^d$

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II: $y^b - by = 783$

The product of 'a', 'b' and 'd' is 6 and the product of 'b' and 'a' is 6. The ratio of 'a' to 'b' is 3 : 2 .

- a) $x > y$
- b) $x < y$
- c) $x = y$ or no relation
- d) $x \geq y$
- e) $x \leq y$

- 79) One of the highest roots in equation I is the same as one of the roots of equation II. Find another root of equation II.

I: $x^2 - 5x - 1634 = 0$

II: $y^2 - my + 1505 = 0$

- a) 35
- b) 43
- c) -38
- d) 41
- e) None of these

- 80) Find the roots of equation III.

I: $(1/8)x + (1/15)y = 5$

II: $(1/7.5)x + (1/4)y = 10.7$

III: $(z^2) - 18z + (x * y)/9 = 0$

- a) 16 and 4
- b) 10 and 4
- c) 7 and 12
- d) 10 and 8
- e) None of these

81) I: $x^2 - (a+b)x - (8^3 - 98) = 0$

II: $y^2 + (a*b)y - (19^2 + 30) = 0$

Condition:

$(a - b) = 1$ and the sum of the squares of 'a' and 'b' is 13, where 'a' and 'b' are positive integers.

Find the LCM of a, b, and the highest root of equation II.

- a) 51
- b) 72
- c) 102





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- d) 136
- e) None of these

82) I. $x^2 - ax + b = 0$

II. $y^2 - (a+2)y + (b+4) = 0$

III. $z^2 - 12z + 35 = 0$

Note:

- i) The root values of I are p and 3
- ii) The root values of II are p and 5

Find which of the following statement is/ are correct.

- 1. One of the roots of III is equal to the value of p
- 2. Product of the roots of II is less than the product of the roots of III
- 3. One of the roots of III is greater than $(b - a)$

- a) Only 1
- b) Only 2 and 3
- c) Only 2
- d) Only 3
- e) All 1,2 and 3

83) I. $1.5*2x^2 - 11*2x + 7*5 = 0$

II. $4x^2 + 15x - 2x^2 - 5x = 0$

Note:

- 1. If 8 is added to the LHS of equation II, the square of the sum of the newly formed roots is taken as 'a'.
- 2. If equation I and equation II are equated, the difference of the square of the newly formed roots is taken as 'b'

Find which of the following condition is true.

- a) $a > b$
- b) $a < b$
- c) $a = b$
- d) $a \geq b$
- e) $a \leq b$

84) If all the roots of $(x - m)^3(x - 9) - 343 = 0$ are integers, then Find the sum of the maximum and minimum possible values of m.

- a) 18
- b) 684
- c) 366





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- d) 330
e) None of these

85) Given $\sqrt[x]{M^{2x}} \times (N+3) = 135$ and N is largest root of the equation $y^2 - 22y + 120 = 0$. Also given, $(P + A+B) = \sqrt{441}$, $N = B + \sqrt[3]{125}$ and $3A + M = \sqrt{324}$. Find for value of $(A*B - M - P + 2N)$ which of the following statements is or are not correct. (Note: All variables are positive)

- i) Resultant value is a perfect Square.
ii) Resultant value is equal to the $B^2 - 2$.
iii) Resultant value = Integer value (where n is an odd number)
a) Only I
b) Only I and II
c) Only III
d) Only II and III
e) All I, II and III

86)

Equations	Conditions
a) $x^2 + 7x + 10 = 0$	d) Smallest root is -2.
b) $y^2 - 15y - 100 = 0$	e) Highest root is divisible by 4.
c) $z^2 + 2z - 120 = 0$	f) Both roots are positive.

- a) a-d
b) a-e and c-f
c) c-d
d) b-e
e) c-f and a-d

87)

Equations	Conditions
a) $x^2 + 5x - 24 = 0$	d) Highest root is 7.
b) $y^2 - 25y - 54 = 0$	e) Highest root is divisible by 3.
c) $z^2 + 21z - 196 = 0$	f) Both roots are positive.

- a) a-d
b) a-f and c-f
c) c-d
d) b-d
e) c-d, b-e and a-e





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88)

Equations	Conditions
a) $x^2 + 6x - 432 = 0$	d) Smallest root is divisible by 7.
b) $y^2 - 36y + 275 = 0$	e) Highest root is prime number.
c) $z^2 - 8z - 345 = 0$	f) Both roots are positive.

- a) a-d
- b) b-f and c-e
- c) c-d
- d) b-d
- e) c-d, b-e and a-e

89)

Equations	Conditions
a) $2x^2 + 9x + 10 = 0$	d) Smallest root is -1.
b) $5y^2 - 3y - 8 = 0$	e) Highest root is divisible by 11.
c) $7z^2 + 2z - 5 = 0$	f) Both roots are positive.

- a) a-d
- b) b-f and c-e
- c) c-d
- d) b-d
- e) c-d, b-e and a-e

90)

Equations	Conditions
a) $3x^2 + 10x + 8 = 0$	d) Highest root is a multiple of two distinct prime numbers.
b) $y^2 - 25y + 84 = 0$	e) Highest root is prime number.
c) $z^2 + 11z - 60 = 0$	f) Both roots are positive.

- a) a-f
- b) b-d and c-f
- c) c-f
- d) a-d
- e) c-d, b-e and c-f

91)

Equations	Conditions
a) $x^2 - 6x - 247 = 0$	d) Smallest root is a multiple of two prime numbers.
b) $6y^2 + 45y - 24 = 0$	e) Highest root is divisible by 19.





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c) $z^2 - 78z + 225 = 0$

f) Both roots are positive.

- a) a-f
- b) b-d and c-e
- c) c-d
- d) a-e and c-f
- e) c-d, b-e and b-f

92)

Equations	Conditions
a) $x^2 - 8x - 468 = 0$	d) Smallest root is a multiple of 5.
b) $6y^2 + 3y - 18 = 0$	e) Highest root is divisible by 13.
c) $z^2 - 32z + 192 = 0$	f) Difference of both roots is 16.

- a) a-f
- b) b-d and c-e
- c) c-d
- d) a-e and c-f
- e) c-d, b-e and b-f

93)

Equations	Conditions
a) $x^2 - 23x - 108 = 0$	d) Smallest root is a multiple of $5/2$.
b) $4y^2 + 4y - 15 = 0$	e) Highest root is divisible by 6.
c) $z^2 - 32z + 252 = 0$	f) Difference of both roots is 31.

- a) a-d
- b) b-d and c-e
- c) c-d
- d) a-f and c-e
- e) c-d, b-e and b-f

94)

Equations	Conditions
a) $x^2 - 7x - 228 = 0$	d) Smallest root is a multiple of 5.
b) $y^2 + 3y - 18 = 0$	e) both roots divisible by 3.
c) $z^2 - 31z + 240 = 0$	f) Both roots are not prime numbers.

- a) a-d
- b) b-d and c-e
- c) c-e





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- d) b-e and c-f
- e) c-d, b-d and b-f

95)

Equations	Conditions
a) $x^2 - 4x - 117 = 0$	d) Highest root is not a prime number.
b) $y^2 + 16y - 105 = 0$	e) both roots divisible by 5.
c) $z^2 - 21z + 80 = 0$	f) Difference of roots is 11.

- a) a-d
- b) b-d and c-e
- c) c-e
- d) c-d and c-f
- e) a-d, b-d and b-f

96) If the highest root of 'a' and lowest root of 'b' of the equation $x^2 - x - 56 = 0$
If the highest root of 'd' and lowest root of 'c' of the equation $y^2 - 5y - 234 = 0$

- a) $a*c + d = -86$
- b) $a + d = 25$
- c) $b - d = 21$
- d) $c*b = 108$
- e) $a*c*d = 1976$

97) If the highest root of 'a' and lowest root of 'b' of the equation $x^2 - 2x - 195 = 0$
If the highest root of 'd' and lowest root of 'c' of the equation $y^2 - 5y - 414 = 0$

- a) $a+c+d = 25$
- b) $a*c = 345$
- c) $d+b = 10$
- d) $2d = 40$
- e) $2b = 16$

98) If the highest root of 'a' and lowest root of 'b' of the equation $x^2 - 6x - 432 = 0$
If the highest root of 'd' and lowest root of 'c' of the equation $y^2 - 3y - 378 = 0$

- a) $a+c = 5$
- b) $a-c = 42$
- c) $b+d = 6$
- d) $b-d = 9$
- e) $a+b+d - c = 25$





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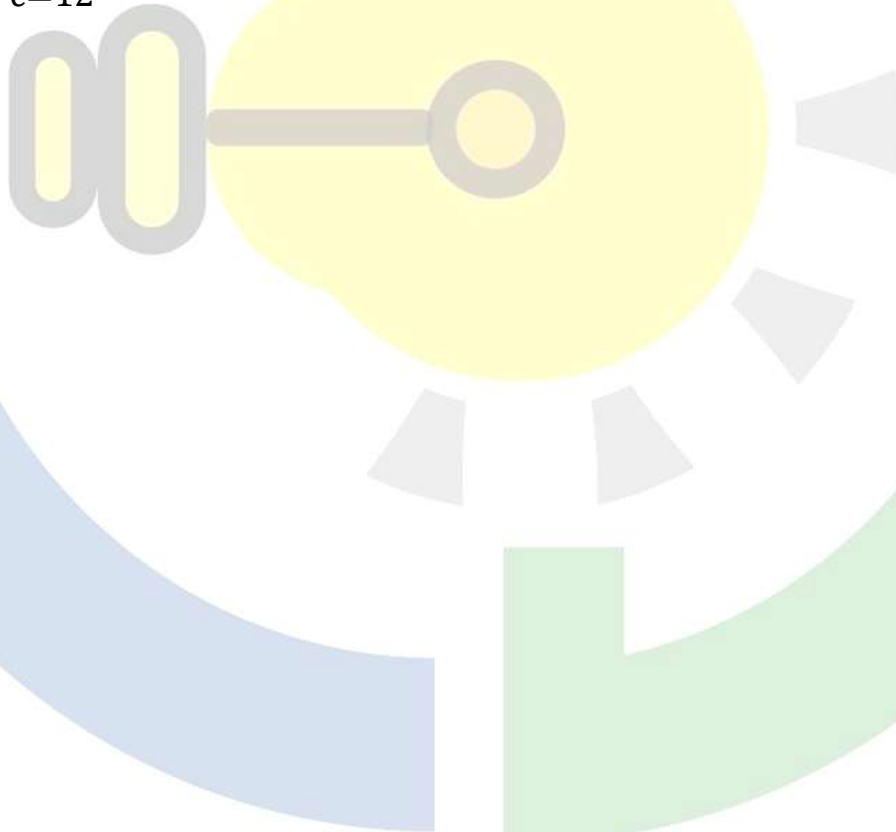
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99) If the highest root of 'a' and lowest root of 'b' of the equation $x^2 - 6x - 72 = 0$
If the highest root of 'd' and lowest root of 'c' of the equation $y^2 - 6y - 91 = 0$
If the highest root of 'e' and lowest root of 'f' of the equation $z^2 - 6z - 315 = 0$

- a) $a+c+e=21$
- b) $a-c-e=-2$
- c) $c+b-f=-2$
- d) $d+b+f=8$
- e) $e+f-c=14$

100) If the highest root of 'a' and lowest root of 'b' of the equation $x^2 - 4x - 45 = 0$
If the highest root of 'd' and lowest root of 'c' of the equation $y^2 - 4y - 96 = 0$
If the highest root of 'e' and lowest root of 'f' of the equation $z^2 - 4y - 32 = 0$

- a) $a+c+e=12$
- b) $a-c-e=7$
- c) $c+b-f=-1$
- d) $d+b+f=8$
- e) $e+f-c=12$





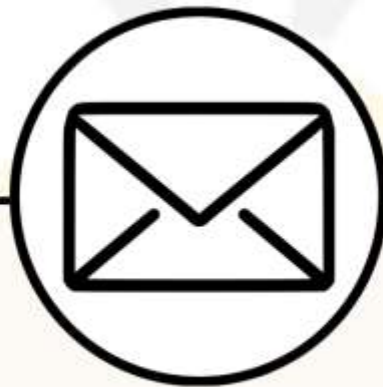
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SOLUTION

1) Answer B

$$(x + 2)(x - 12) = 0$$

$$x = -2, 12$$

$$(y + 2)(y + 2) = 0$$

$$y = -2, -2$$

2) Answer E

$$(x - 3)(x - 2) = 0$$

$$x = 3, 2$$

$$(y - 3)(y - 5) = 0$$

$$y = 3, 5$$

3) Answer B

$$(x - 5)(x - 3) = 0$$

$$x = 3, 5$$

$$(y - 3)(y + 4) = 0$$

$$y = 3, -4$$

4) Answer C

$$(x + 8)(x + 8) = 0$$

$$x = -8, -8$$

$$(y + 13)(y + 2) = 0$$

$$y = -2, -13$$

5) Answer C

$$x(x - 18) + 5(x - 18) = 0$$

$$(x - 18)(x + 5) = 0$$

$$x = -5, 18$$

$$y(y + 13) - 7(y + 13) = 0$$

$$(y + 13)(y - 7) = 0$$

$$y = 7, -13$$

6) Answer E

$$(2x + 1)(x - 1) = 0$$

$$x = -1/2, 1$$

$$(2y - 2)(y - 1) = 0$$

$$y = 1, 1$$





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7) Answer E

$$(x + 13)(x + 20) = 0$$

$$x = -13, -20$$

$$(y - 2)(y + 13) = 0$$

$$y = 2, -13$$

8) Answer E

$$(x - 4)(x + 36) = 0$$

$$x = 4, -36$$

$$(y - 4)(y - 27) = 0$$

$$y = 4, 27$$

9) Answer C

$$x(x - 27) + 24(x - 27) = 0$$

$$(x - 27)(x + 24) = 0$$

$$x = 27, -24$$

$$y(y + 24) + 11(y + 24) = 0$$

$$(y + 24)(y + 11) = 0$$

$$y = -24, -11$$

10) Answer B

$$x(x - 12) - 16(x - 12) = 0$$

$$(x - 12)(x - 16) = 0$$

$$x = 12, 16$$

$$y(y + 15) - 12(y + 15) = 0$$

$$(y + 15)(y - 12) = 0$$

$$y = 12, -15$$

11) Answer C

$$(x - 13)(x - 9) = 0$$

$$x = 9, 13$$

$$(y - 11)(y - 13) = 0$$

$$y = 11, 13$$

12) Answer C

$$(x + 7)(x - 8) = 0$$

$$x = -7, 8$$

$$(y - 10)(y - 9) = 0$$

$$y = 9, 10$$





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13) Answer D

$$(3x + 9)(x + 7) = 0$$

$$x = -3, -7$$

$$(y - 7)(y + 3) = 0$$

$$y = 7, -3$$

14) Answer E

$$(x + 10)(x + 13) = 0$$

$$x = -10, -13$$

$$(2y + 12)(y + 10) = 0$$

$$y = -6, -10$$

15) Answer E

$$(6x - 1)(5x - 1) = 0$$

$$x = 1/6, 1/5$$

$$(5y - 1)(3y - 1) = 0$$

$$y = 1/5, 1/3$$

16) Answer E

$$(9x - 8)(x - 2) = 0$$

$$X = 8/9, 2$$

$$(y - 2)(3y - 10) = 0$$

$$Y = 2, 10/3$$

17) Answer E

$$(5x + 5)(x + 2) = 0$$

$$x = -1, -2$$

$$(y + 1)(y - 2) = 0$$

$$y = -1, 2$$

18) Answer A

$$(8x + 1)(7x - 1) = 0$$

$$y = -1/8, 1/7$$

$$(3y + 1)(5y + 1) = 0$$

$$y = -1/3, -1/5$$

19) Answer C

$$(2x - 6)(x - 6) = 0$$

$$x = 3, 6$$

$$(y - 4)(y - 8) = 0$$

$$y = 4, 8$$





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20) Answer C

$$(2x - 30)(x - 10) = 0$$

$$x = 15, 10$$

$$(y - 14)(y - 16) = 0$$

$$y = 14, 16$$

21) Answer D

$$(3x+1)(4x+1) = 0$$

$$x = -1/3, -1/4$$

$$(8y+1)(6y+1) = 0$$

$$y = -1/8, -1/6$$

22) Answer D

$$(2x - 8)(x - 16) = 0$$

$$x = 4, 16$$

$$(y - 18)(y - 22) = 0$$

$$y = 18, 22$$

23) Answer A

$$3x^2 - 2x = 0$$

$$x = 0, 2/3$$

$$(3Y+2)(Y+1) = 0$$

$$Y = -2/3, -1$$

24) Answer C

$$3x(x+3) + 5(x+3) = 0$$

$$(3x+5)(x+3) = 0$$

$$x = -3, -5/3$$

$$(y+3)(y+1) = 0$$

$$y = -1, -3$$

25) Answer D

$$7x^2 = 8x$$

$$x = 0, 8/7$$

$$(y-15)^2 = 0$$

$$y = 15$$

26) Answer E

$$x^2 = 36$$

$$x = \pm 6$$





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$$Y^3=216$$
$$y=6$$

27) Answer B

$$x^3=9261$$
$$x=21$$
$$(y-21)(y-18)=0$$
$$y=21,18$$

28) Answer C

$$x = \pm 13$$
$$y = \sqrt{169} = \pm 13$$

29) Answer E

$$x^2-361=0$$
$$x=\pm 19$$
$$y^3=6859$$
$$y=19$$

30) Answer E

$$x^2 = 144$$
$$x = 12, -12$$
$$y^3 - 1728 = 0$$
$$y = 12$$

31) Answer A

$$2x+5y=51$$
$$7x+3y=77$$
$$x=8$$
$$y=7$$

32) Answer A

$$4x+5y=94$$
$$5x-3y=25$$
$$37x=407$$
$$x = 11$$
$$y = 10$$

33) Answer C

$$x(x - 11) = 0$$





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$$x = 0, 11$$
$$y(y - 11) - 10(y - 11) = 0$$
$$y = 11, 10$$

34) Answer B

$$(x-1)(5x-11)=0$$
$$x=1, 11/5$$
$$(5y+2)(y-1)=0$$
$$y=-2/5, 1$$

35) Answer C

$$x^2 = 121$$
$$x = 11, -11$$
$$(y - 1)(y - 11) = 0$$
$$y = 1, 11$$

36) Answer C

$$2x+8-20=0$$
$$y^2 - 21=43$$
$$Y=8, -8$$
$$X=14, 6$$

37) Answer D

$$16x+12y=208$$
$$21x+12y=243$$
$$x=7$$
$$28+3y=52$$
$$3Y=52-28$$
$$y=8$$

38) Answer C

$$x^2 - 36 = 0$$
$$x = 6, -6$$
$$y^3 = 27$$
$$y = 3$$

39) Answer D

$$8x+6y=81$$
$$8x-6y=4$$
$$17x=85$$





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$$x=5$$

$$15+2y=27$$

$$2y=12$$

$$y=6$$

40) Answer B

$$x(x-19)+3(x-19)=0$$

$$(x-19)(x+3)=0$$

$$x=-3, 19$$

$$y(y+9)+3(y+9)=0$$

$$(y+9)(y+3)=0$$

$$y=-9, -3$$

41) Answer D

$$10x=85$$

$$x=8.5$$

$$4x-4=25$$

$$y=34-25$$

$$y=9$$

42) Answer D

$$5y=60$$

$$y=12$$

$$2x+12=34$$

$$x=11$$

43) Answer C

$$16x^2=81$$

$$x^2=81/16$$

$$x=-9/4, 9/4$$

$$64y^2=100$$

$$Y^2=100/64$$

$$y=-5/4, 5/4$$

44) Answer E

$$(x-13)(x-15)=0$$

$$x=15, 13$$

$$(y-15)(y-16)=0$$

$$y=15, 16$$

45) Answer A





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$$(4x-7)(3x-5)=0$$

$$x=7/4, 5/3$$

$$(8y-9)(5y-6)=0$$

$$y=9/8, 6/5$$

46) Answer B

$$x(x+20)+17(x+20)=0$$

$$(x+20)(x+17)=0$$

$$x=-17, -20$$

$$y(y+20)+22(y+20)=0$$

$$(y+20)(y+22)=0$$

$$y=-22, -20$$

47) Answer A

$$3x(x-10)-6(x-10)=0$$

$$(3x-6)(x-10)=0$$

$$x=2, 10$$

$$y(y+15)-1(y+15)=0$$

$$(y+15)(y-1)=0$$

$$y=1, -15$$

48) Answer C

$$(x-16)(x-12)=0$$

$$x=16, 12$$

$$(y-13)(y-16)=0$$

$$y=13, 16$$

49) Answer D

$$x(x-21)-20(x-21)=0$$

$$(x-21)(x-20)=0$$

$$x=21, 20$$

$$y(y+25)-20(y+25)=0$$

$$(y+25)(y-20)=0$$

$$y=20, -25$$

50) Answer D

$$(x+9)(x+10)=0$$

$$x=-9, -10$$

$$7y(2y-3)-8(2y-3)=0$$

$$y=3/2, 8/7$$





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51) Answer D

$$(12x - 17)(x - 2) = 0$$

$$x = 17/12, 2$$

$$(3y - 9)(y - 7) = 0$$

$$y = 3, 7$$

52) Answer D

$$(4x - 5)(2x - 3) = 0$$

$$x = 5/4, 3/2$$

$$(3y - 7)(y - 2) = 0$$

$$y = 7/3, 2$$

53) Answer E

$$(3x - 1)(x - 7) = 0$$

$$x = 7, 1/3$$

$$(y - 8)(y - 7) = 0$$

$$y = 8, 7$$

54) Answer C

$$3x(x - 4) - 6(x - 4) = 0$$

$$x = 2, 4$$

$$5y(y - 4) - 6(x - 4) = 0$$

$$y = 2, 4$$

55) Answer D

$$9x + 5)(2x + 7) = 0$$

$$x = -5/9, -7/2$$

$$(5y - 9)(6y - 7) = 0$$

$$y = 9/5, 7/6$$

56) Answer D

$$(30x + 29)(x + 2) = 0$$

$$x = -29/30, -2$$

$$(9y + 7)(3y - 8) = 0$$

$$y = -7/9, 8/3$$

57) Answer D

$$x(x - 37) + 21(x - 37) = 0$$

$$(x - 37)(x + 21) = 0$$

$$x = -21, 37$$





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$$\begin{aligned}y(y-38)-39(y-38)&=0 \\(y-38)(y-39)&=0 \\y&=38,39\end{aligned}$$

58) Answer E

$$\begin{aligned}x^2-7\sqrt{5}x-8\sqrt{5}x+280&=0 \\x(x-7\sqrt{5})-8\sqrt{5}(x+7\sqrt{5})&=0 \\(x-7\sqrt{5})(x-8\sqrt{5})&=0 \\x&=7\sqrt{5},8\sqrt{5} \\y^2-11\sqrt{5}y-8\sqrt{5}y+440&=0 \\y(y-11\sqrt{5})-8\sqrt{5}(y-11\sqrt{5})&=0 \\(y-11\sqrt{5})(y-8\sqrt{5})&=0 \\y&=11\sqrt{5},8\sqrt{5}\end{aligned}$$

59) Answer D

$$\begin{aligned}(x-4\sqrt{5})(x-5\sqrt{5})&=0 \\x&=4\sqrt{5},5\sqrt{5} \\(y-13\sqrt{3})(y-8\sqrt{3})&=0 \\y&=13\sqrt{3},8\sqrt{3}\end{aligned}$$

60) Answer A

$$\begin{aligned}x(x-5\sqrt{2})-6\sqrt{2}(x-5\sqrt{2})&=0 \\(x-5\sqrt{2})(x-6\sqrt{2})&=0 \\x&=6\sqrt{2},5\sqrt{2} \\y(y-4\sqrt{3})-3\sqrt{3}(y-4\sqrt{3})&=0 \\(y-4\sqrt{3})(y-3\sqrt{3})&=0 \\y&=4\sqrt{3},3\sqrt{3}\end{aligned}$$

61) Answer C

$$\begin{aligned}(x+5\sqrt{3})(x+\sqrt{3})&=0 \\x&=-5\sqrt{3},-\sqrt{3} \\(y-6\sqrt{3})(y-2\sqrt{3})&=0 \\y&=6\sqrt{3},2\sqrt{3}\end{aligned}$$

62) Answer D

$$\begin{aligned}(5x+16\sqrt{3})(x+4\sqrt{3})&=0 \\x&=-4\sqrt{3} \text{ or } -(16\sqrt{3})/5 \\(2y+3\sqrt{3})(y+3\sqrt{3})&=0 \\y&=-3\sqrt{3} \text{ or } -(3\sqrt{3})/2\end{aligned}$$

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63) Answer A

$$(x-6)(2x-25)$$

$$x = 6, 25/2$$

$$(2y+13)(2y+27)=0$$

$$y = -13/2, -27/2$$

64) Answer A

$$(x-15)-15(x-15)=0$$

$$x = 15, 15$$

$$(y-12)(y-8)=0$$

$$y = 12, 8$$

65) Answer C

$$(x-3.5)(x-2.4)=0$$

$$x = 2.4, 3.5$$

$$(y-2.5)(y-1.6)$$

$$y = 1.6, 2.5$$

66) Answer D

$$x^{(3/2)} - 16/\sqrt{x} = 0$$

$$x = 4, 0$$

$$\sqrt{(36y^2)} = \sqrt{(7^2 + 24^2)}$$

$$Y = 25/6$$

67) Answer C

$$(3x-4\sqrt{6})(x-2) = 0$$

$$x = (4\sqrt{6})/3, 2$$

$$(y-5)(2y-3\sqrt{3})=0$$

$$y = 5, (3\sqrt{3})/2$$

68) Answer D

$$42/\sqrt{x} - 6/\sqrt{x} = x^{3/2}$$

$$x = 6, -6$$

$$Y^3 = 512$$

$$y = 8$$

69) Answer A

$$1/x^{(1/3)} - 1/x^{(2/3)} = 5x^{-(2/3)}$$

$$x = 6$$

$$y^2 + 12y + 35 = 0$$

$$y = -7, -5$$





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70) Answer E

$$785 + x = 846 - 49$$

$$x = 797 - 785$$

$$x = 12$$

$$y^2 = 144$$

$$y = 12, -12$$

71) Answer A

$$\text{II: } (14/x) - (735/x^2) = -1$$

Let

$$1 + (14/x) - (735/x^2) = 0$$

Multiply by ' y^2 '

$$x^2 + 14x - 735 = 0$$

$$x^2 + 35x - 21x - 735 = 0$$

$$x(x + 35) - 21(x + 35) = 0$$

$$(x + 35)(x - 21) = 0$$

$$\text{So, } x = 21 \text{ and } -35$$

Then, The positive root of equation II is 21

So,

Equation I

$$(169/y) + (173.25/x) = 14.75$$

Let

$$(169/y) + (173.25/21) = 14.75$$

$$(169/y) + 8.25 = 14.75$$

$$169/y = 6.5$$

$$y = 169/6.5$$

$$y = 26$$

72) Answer A

$$\text{I: } (348/\sqrt{x}) + (240/\sqrt{y}) = 44$$

$$(87/\sqrt{x}) + (60/\sqrt{y}) = 11$$

$$\text{II: } (168/\sqrt{x}) - (288/\sqrt{y}) = -4$$

$$(42/\sqrt{x}) - (72/\sqrt{y}) = -1$$

Multiple (i) by 6 and (ii) by 5

$$(522 + 210)/\sqrt{x} = 66 - 5$$

$$\sqrt{x} = 732/61$$

$$\sqrt{x} = 12$$

$$\sqrt{y} = 16$$

$$\text{III: } \sqrt{x} + \sqrt{y} - c = 0$$

$$C = 12 + 16 = 28$$





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73) Answer A

$$(II) * 2 \Rightarrow (2/\sqrt{2})x + (6/\sqrt{3})y = 22$$

Then

$$(II) - (I)$$

$$(6/\sqrt{3})y - (1/\sqrt{3})y = 22 - 7$$

$$(5/\sqrt{3})y = 15$$

$$(1/\sqrt{3})y = 3$$

$$y = 3\sqrt{3}$$

Then

$$I: (2/\sqrt{2})x + (1/\sqrt{3})y = 7$$

Let

$$(2/\sqrt{2})x + (1/\sqrt{3}) * 3\sqrt{3} = 7$$

$$(2/\sqrt{2})x + 3 = 7$$

$$(2/\sqrt{2})x = 4$$

$$(1/\sqrt{2})x = 2$$

$$x = 2\sqrt{2}$$

Then

$$\text{Product of } (x^2 * y * \sqrt{6})$$

Let

$$= (2\sqrt{2})^2 * (3\sqrt{3}) * \sqrt{6}$$

$$= 24\sqrt{18}$$

$$= 72\sqrt{2}$$

74) Answer A

$$I: (12/288)x + (1/1.6)y = 3.5 * 5$$

$$(1/24)x + (1/1.6)y = 17.5$$

Let

$$(x + 15y)/24 = 17.5$$

$$x + 15y = 420 \text{ ----- (1)}$$

$$II: (1/1.6)x + (4/80)y = 5.875 * 5$$

$$(1/1.6)x + (1/20)y = 29.375$$

Let

$$(25x + 2y)/40 = 29.375$$

$$25x + 2y = 1175 \text{ ----- (2)}$$

Let

$$(1) * 25 \Rightarrow 25x + 375y = 10500 \text{ ----- (3)}$$

Then solve (2) and (3)

$$373y = 9325$$

$$y = 25$$

Then





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$$(1) \Rightarrow x + 15 * 25 = 420$$

$$x = 45$$

$$\text{III: } \sqrt{y} * z^2 - 40z + 35 = 0$$

Let

$$\sqrt{25} * z^2 - 40z + 35 = 0$$

Then the equation as

$$5z^2 - 40z + 35 = 0$$

Let

$$5z^2 - 35z - 5z + 35 = 0$$

$$5z(z - 6) - 27(z - 6) = 0$$

$$(5z - 1)(z - 7) = 0$$

Then

$$z = 7 \text{ and } 1$$

75) Answer C

$$\text{I: } x^2 + 18x + 87 = (x + 9)^2 + a$$

$$x^2 + 18x + 87 = x^2 + 81 + 18x + a$$

$$a = 87 - 81$$

$$a = 6$$

$$\text{II: } 4y^2 + 220 + 60y = (2y + 15)^2 - b$$

Let

$$4y^2 + 220 + 60y = 4y^2 + 225 + 60y - b$$

$$b = 5$$

Hence

$$a * b = 30$$

76) Answer B

$$\text{I: } x^2 + 278 - 36x + p = (x - 18)^2$$

Let

$$x^2 + 278 - 36x + p = x^2 + 324 - 36x$$

$$p = 324 - 278$$

$$p = 46$$

$$\text{II: } y^2 + 585 - 50y = (y - q)^2 - 40$$

Let

$$y^2 + 585 - 50y = (y - q)^2 - 40$$

$$y^2 + 625 - 50y = (y - q)^2$$

$$y^2 - 25y - 25y + 625 = (y - q)^2$$

$$y(y - 25) - 25(y - 25) = (y - q)^2$$

$$(y - 25)(y - 25) = (y - q)^2$$

$$(y - 25)^2 = (y - q)^2$$





Top 100 Quadratic Equation



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So, $q = 25$

Then

$$p - q = 46 - 25 = 21$$

Let

$$\text{III: } z^2 + 18z - c = 0$$

Then

$$21^2 + 18 * 21 = c$$

$$441 + 378 = c$$

$$c = 819$$

77) Answer A

The value of 'b' is the smallest prime number

So, $b = 2$

$$\text{I: } x^b + 18x = 73x - 148.8a$$

$$x^2 = 55x - 148.8a$$

One of the roots of equation I is 24

$$\text{Let } 24^2 = 55 * 24 - 148.8a$$

$$576 = 1320 - 148.8a$$

$$148.8a = 744$$

$$a = 5$$

Then

$$x^2 = 55x - 148.8 * 5$$

$$x^2 = 55x - 744$$

$$x^2 - 55x + 744 = 0$$

Let

$$x^2 - 31x - 24x + 744 = 0$$

$$x(x - 31) - 24(x - 31) = 0$$

$$(x - 31)(x - 24) = 0$$

So, $x = 24$ and 31

$$\text{II: } y^a = 128b * y$$

Let

$$y^5 = 128 * 2 * y$$

$$y^5 - 256y = 0$$

$$y(y^4 - 256) = 0$$

$$\text{So, } y = 0 \text{ and } y = \sqrt[4]{256} = 4$$

$$x > y$$

78) Answer C

The product of 'a', 'b' and 'd' is 6

$$\text{Let, } a * b * d = 6$$





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The product of 'b' and 'a' is 6

Let

$$a * b = 6$$

Then

$$d = 1$$

Let

$$a : b = 3 : 2$$

So

$$3x * 2x = 6$$

$$x^2 = 1$$

$$x = 1$$

So

$$a = 3 \text{ and } b = 2$$

Let

$$\text{I: } x^a - 8x^b = 384x^d$$

Then

$$x^3 - 8x^2 = 384x$$

$$x^3 - 8x^2 - 384x = 0$$

$$x(x^2 - 8x - 384) = 0$$

$$x(x^2 - 24x + 16x - 384) = 0$$

$$x[x(x - 24) + 16(x - 24)] = 0$$

$$x(x - 24)(x + 16) = 0$$

$$\text{So, } x = 0, 24 \text{ and } -16$$

$$\text{II: } y^b - by = 783$$

Let

$$y^2 - 2y = 783$$

$$y^2 - 2y - 783 = 0$$

$$y^2 + 27y - 29y - 783 = 0$$

$$y(y + 27) - 29(y + 27) = 0$$

$$(y - 29)(y + 27) = 0$$

$$\text{So, } y = 29 \text{ and } y = -27$$

No relation

79) Answer A

$$\text{I: } x^2 - 5x - 1634 = 0$$

Let

$$x^2 + 38y - 43y - 1634 = 0$$

$$x(x + 38) - 43(y + 38) = 0$$

$$(x - 43)(x + 38) = 0$$

$$x = 43 \text{ and } x = -38$$





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Thus, the value of $x = -38$ and 43

$$\text{II: } y^2 - my + 1505 = 0$$

One of the highest roots in equation I = 43

Let

One of the roots = 43

So

$$43^2 - m * 43 + 1505 = 0$$

$$43m = 3354$$

$$m = 78$$

$$\text{So } y^2 - 78y + 1505 = 0$$

$$y^2 - 43y - 35y + 1505 = 0$$

$$(y - 43)(y - 35) = 0$$

Thus, the value of $y = 43$ and 35

80) Answer D

Equation (I)

$$x/8 + y/15 = 5$$

$$15x + 8y = 600 \dots\dots (1)$$

Equation (II)

$$x/15 + y/8 = 10.7$$

$$8x + 15y = 642 \dots\dots (2)$$

solving (1) and (2),

$$(1) * 8 == 120x + 64y = 4800$$

$$(2) * 15 == 120x + 225y = 9630$$

$$161y = 4830$$

$$y = 30$$

$$8x + 15(30) = 642$$

$$8x = 192$$

$$x = 24$$

$$\text{III: } z^2 - 18z + (x * y)/9 = 0$$

$$z^2 - 18z + (24 * 30)/9 = 0$$

$$\text{Then, } z^2 - 18z + 80 = 0$$

$$z^2 - 10z - 8z + 80 = 0$$

$$z(z - 10) - 8(z - 10) = 0$$

$$(z - 10)(z - 8) = 0$$

$$z = 10, 8$$

81) Answer C

$$a - b = 1 \dots\dots (1)$$

$$a^2 + b^2 = 13 \dots\dots (2)$$





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From (1)

$$a = b + 1 \text{ ---- (3)}$$

$$(b + 1)^2 + b^2 = 13$$

$$b^2 + 2b + 1 + b^2 = 13$$

$$2b^2 + 2b + 1 - 13 = 0$$

$$2b^2 + 2b - 12 = 0$$

$$b^2 + b - 6 = 0$$

$$b^2 + 3b - 2b - 6 = 0$$

$$b(b + 3) - 2(b + 3) = 0$$

$$(b + 3)(b - 2) = 0$$

$$b = +2 \text{ and } -3$$

Since the value of b is positive

$$b = +2$$

Then

$$a - b = 1$$

$$a = 1 + b$$

$$a = 1 + 2$$

$$a = +3$$

$$\text{I) } x^2 - (a + b)x - (192 + 53) = 0$$

$$x^2 - (3 + 2)x - (361 + 53) = 0$$

$$x^2 - 5x - 414 = 0$$

$$x^2 + 18x - 23x - 414 = 0$$

$$x(x + 18) - 23(x + 18) = 0$$

$$(x + 18)(x - 23) = 0$$

$$x = +23 \text{ and } -18$$

$$\text{II) } y^2 + (a * b)y - (212 - 50) = 0$$

$$y^2 + (3 * 2)y - (441 - 50) = 0$$

$$y^2 + 6y - 391 = 0$$

$$y^2 + 23y - 17y - 391 = 0$$

$$y(y + 23) - 17(y + 23) = 0$$

$$(y + 23)(y - 17) = 0$$

$$y = +17 \text{ and } -23$$

82) Answer B

$$x^2 - ax + b = 0$$

$$\text{put } x = 3$$

$$3a - b = 9 \text{ ---- (i)}$$

$$y^2 - (a + 2)y + (b + 4) = 0$$

$$\text{put } x = 5$$

$$25 - 5a - 10 + b + 4 = 0$$

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$$5a - b = 19 \text{-----(ii)}$$

(i)-(ii)

$$3a - 5a = 9 - 19$$

$$2a = 10$$

$$a = 5$$

$$b = 6$$

$$\text{now } x^2 - 5x + 6 = 0$$

$$x^2 - 3x - 2x + 6 = 0$$

$$x = 3, 2$$

$$\text{now } y^2 - (a+2)y + (b+4) = 0$$

$$y^2 - 7y + 10 = 0$$

$$y = 5, 2$$

$$\text{value of } p = 2$$

$$z^2 - 12z + 35 = 0$$

$$z = 7, 5$$

By checking Statement 1

One of the roots of III is equal to the value of p

$$\text{Roots of III} = 7, 5$$

$$\text{Value of } p = 2$$

So, the statement I not follows

By checking Statement II

The product of the roots of II is less than the product of the roots of III

$$\text{Roots of II} = 5, 2$$

$$\text{Product of the roots of II} = 10$$

$$\text{Roots of III} = 7, 5$$

$$\text{Product of the roots of III} = 35$$

So, Statement II follows

Option 3

One of the roots of III is greater than $(b - a)$

$$\text{Roots of III} = 7, 5$$

$$(b - a) = 6 - 5 = 1$$

So, statement 3 does follows

Hence, Statement 2 and 3 follows

83) Answer A

To find 'a':

$$4x^2 + 15x - 2x^2 - 5x = 0$$

$$2x^2 - 10x + 8 = 0$$

$$2x^2 - 8x - 2x + 8 = 0$$

$$2x(x - 4) - 2(x - 4) = 0$$





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$$(2x - 2)(x - 4) = 0$$

$$x = 1 \text{ (or) } x = 4$$

$$a = (1 + 4)^2 = 5^2$$

$$a = 25$$

To find 'b':

$$1.5 \cdot 2x^2 - 11 \cdot 2x + 7 \cdot 5 = 0$$

$$3x^2 - 22x + 35 = 2x^2 - 10x$$

$$x^2 - 12x + 35 = 0$$

$$x^2 - 7x - 5x + 35 = 0$$

$$x(x - 7) - 5(x - 7) = 0$$

$$(x - 5)(x - 7) = 0$$

$$x = 5 \text{ (or) } x = 7$$

$$b = 7^2 - 5^2 = 49 - 25$$

$$b = 24$$

So, $a > b$

84) Answer A

$$(x - m)^3(x - 9) - 343 = 0$$

$$(x - m)^3(x - 9) = 343$$

Case - (i),

$$(x - m)^3 = 343, (x - 9) = 1$$

$$x = 10$$

$$x - m = 7$$

$$10 - m = 7$$

$$m = 3$$

Case - (ii),

$$(x - m)^3 = 1, (x - 9) = 343$$

$$x = 352$$

$$x - m = 1$$

$$352 - m = 1$$

$$m = 351$$

Case - (iii),

$$(x - m)^3 = -343, (x - 9) = -1$$

$$x = 8$$

$$x - m = -7$$

$$8 - m = -7$$

$$m = 15$$

Case - (iv),

$$(x - m)^3 = -1, (x - 9) = -343$$

$$x = -334$$





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$$x - m = -1$$

$$-334 - m = -1$$

$$m = -333$$

$$\text{Req. value} = 351 + (-333) = 18$$

85) Answer D

$$y^2 - 22y + 120 = 0$$

$$y^2 - 12y - 10y + 120 = 0$$

$$y(y-12) - 10(y-12) = 0$$

$$(y-12)(y-10) = 0$$

$$y = 12, 10$$

$$N = 12$$

$$\sqrt[3]{M^{2x}} \times (N+3) = 135$$

$$M^2 \times 15 = 135$$

$$M^2 = 9$$

$$M = 3$$

$$12 = B + 5$$

$$B = 7$$

$$3A + 3 = 18$$

$$A = 5$$

$$P + 5 + 7 = 21$$

$$P = 9$$

Now,

$$(A \times B - M - P + 2N)$$

$$(5 \times 7 - 3 - 9 + 2 \times 12)$$

$$(35 - 3 - 9 + 24)$$

$$47$$

Only II and III

86) Answer D

$$x^2 + 7x + 10 = 0$$

$$x^2 + 5x + 2x + 10 = 0$$

$$x = -5, -2$$

No condition follow

$$y^2 - 15y - 100 = 0$$

$$y^2 - 20y + 5y - 100 = 0$$

$$y = 20, -5$$

condition B-E follow

$$z^2 + 2z - 120 = 0$$

$$z^2 + 12z - 10z - 120 = 0$$





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$$z = -12, 10$$

No condition follow

87) Answer D

$$x^2 + 5x - 24 = 0$$

$$x^2 + 8x - 3x - 24 = 0$$

$$x = -8, 3$$

condition a-e follow

$$y^2 - 25y - 54 = 0$$

$$y^2 - 27y + 2y - 54 = 0$$

$$y = 27, -2$$

condition b-e follow

$$z^2 + 21z - 196 = 0$$

$$z^2 + 28z - 7z - 196 = 0$$

$$z = -28, 7$$

condition c-d follow

88) Answer B

$$x^2 + 6x - 432 = 0$$

$$x^2 + 24x - 18x - 432 = 0$$

$$x = -24, +18$$

No condition follow

$$y^2 - 36y + 275 = 0$$

$$y^2 - 25y - 11y + 275 = 0$$

$$y = 25, 11$$

condition B-F follow

$$z^2 - 8z - 345 = 0$$

$$z^2 - 23z + 15z - 345 = 0$$

$$z = 23, -15$$

condition C-E follow

89) Answer D

$$2x^2 + 9x + 10 = 0$$

$$2x^2 + 4x + 5x + 10 = 0$$

$$x = -2.5, -2$$

No condition follow

$$5y^2 - 3y - 8 = 0$$

$$5y^2 - 8y + 5y - 100 = 0$$

$$y = 1.6, -1$$

condition B-D follow





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$$7z^2 + 2z - 5 = 0$$

$$7z^2 + 7z - 5z - 5 = 0$$

$$z = 0.714, -1$$

No condition follow

90) Answer B

$$3x^2 + 10x + 8 = 0$$

$$3x^2 + 6x + 4x + 8 = 0$$

$$x = -1.33, -2$$

No condition follow

$$y^2 - 25y + 84 = 0$$

$$y^2 - 21y - 5y + 84 = 0$$

$$y = 21, 5$$

condition B-D and B-F follow

$$z^2 + 11z - 60 = 0$$

$$z^2 + 15z - 4z - 60 = 0$$

$$z = -15, 4$$

No condition follow

91) Answer D

$$x^2 - 6x - 247 = 0$$

$$x^2 - 19x + 13x - 247 = 0$$

$$x(x - 19) + 13(x - 19) = 0$$

$$(x + 13)(x - 19) = 0$$

$$x = 19, -13$$

Condition A-E follow

$$6y^2 + 45y - 24 = 0$$

$$6y^2 + 48y - 3y + 24 = 0$$

$$6y(y + 8) - 3(y + 8) = 0$$

$$(6y - 3)(y + 8) = 0$$

$$y = 0.5, -8$$

No condition follow

$$z^2 - 78z + 225 = 0$$

$$z^2 - 75z - 3z + 225 = 0$$

$$z = 75, 3$$

condition C-F follow

92) Answer D

$$x^2 - 8x - 468 = 0$$

$$x^2 - 26x + 18x - 468 = 0$$





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$$x(x - 26) + 18(x - 26) = 0$$

$$(x - 26)(x + 18) = 0$$

$$x = 26, -18$$

Condition A-E follow

$$6y^2 + 3y - 18 = 0$$

$$6y^2 + 12y - 9y - 18 = 0$$

$$6y(y+2) - 9(y+2) = 0$$

$$(6y-9)(y+2) = 0$$

$$y = 1.5, -2$$

No condition follow

$$z^2 - 32z + 192 = 0$$

$$z^2 - 24z - 8z + 192 = 0$$

$$z = 24, 8$$

condition C-F follow

93) Answer D

$$x^2 - 23x - 108 = 0$$

$$x^2 - 27x + 4x - 108 = 0$$

$$x(x - 27) + 4(x - 27) = 0$$

$$(x - 27)(x + 4) = 0$$

$$x = 27, -4$$

Condition A-F follow

$$4y^2 + 4y - 15 = 0$$

$$4y^2 + 10y - 6y - 15 = 0$$

$$2y(2y+5) - 3(2y+5) = 0$$

$$(2y-3)(2y+5) = 0$$

$$y = 1.5, -2.5$$

No condition follow

$$z^2 - 32z + 252 = 0$$

$$z^2 - 18z - 14z + 192 = 0$$

$$z = 18, 14$$

condition C-E follow

94) Answer D

$$x^2 - 7x - 228 = 0$$

$$x^2 - 19x + 12x - 228 = 0$$

$$x = 19, -12$$

No Condition follow

$$y^2 + 3y - 18 = 0$$

$$y^2 + 6y - 3y - 18 = 0$$





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$$y = -6, 3$$

condition B-E follow

$$z^2 - 31z + 240 = 0$$

$$z^2 - 16z - 15z + 240 = 0$$

$$z = 16, 15$$

condition C-F follow

95) Answer D

$$x^2 - 4x - 117 = 0$$

$$x^2 - 13x + 9x - 117 = 0$$

$$x = 13, -9$$

No Condition follow

$$y^2 + 16y - 105 = 0$$

$$y^2 + 21y - 5y - 105 = 0$$

$$y = -21, 5$$

No Condition follow

$$z^2 - 21z + 80 = 0$$

$$z^2 - 16z - 5z + 80 = 0$$

$$z = 16, 5$$

condition C-D, C-F follow

96) Answer A

$$x^2 - x - 56 = 0$$

$$x^2 - 8x + 7x - 56 = 0$$

$$x = 8, -7$$

$$a = 8, b = -7$$

$$y^2 - 5y - 234 = 0$$

$$y^2 - 18y + 13y - 234 = 0$$

$$y = 18, -13$$

$$d = 18, c = -13$$

by option-

$$a * c + d = 8 * (-13) + 18 = -104 + 18 = -86$$

97) Answer C

$$x^2 - 2x - 195 = 0$$

$$x^2 - 15x + 13x - 195 = 0$$

$$x = 15, -13$$

$$a = 15, b = -13$$

$$y^2 - 5y - 414 = 0$$

$$y^2 - 23y + 18y - 414 = 0$$





Top 100 Quadratic Equation



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$y = 23, -18$
 $c = -18, d = 23$
by option-
 $d + b = 10$

98) Answer B
 $x^2 - 6x - 432 = 0$
 $x^2 - 24x + 18x - 432 = 0$
 $x = 24, -18$
 $a = 24, b = -18$
 $y^2 - 3y - 378 = 0$
 $y^2 - 21y + 18y - 378 = 0$
 $y = 21, -18$
 $c = -18, d = 21$
by option-
 $a - c = 42$

99) Answer B
 $x^2 - 6x - 72 = 0$
 $x^2 - 12x + 6x - 72 = 0$
 $x = 12, -6$
 $a = 12, b = -6$
 $y^2 - 6y - 91 = 0$
 $y^2 - 13y + 7y - 91 = 0$
 $y = 13, -7$
 $c = -7, d = 13$
 $z^2 - 6z - 315 = 0$
 $z^2 - 21z + 15z - 315 = 0$
 $z = 21, -15$
 $e = 21, f = -15$
by option-
 $a - c - e = -2$

100) Answer E
 $x^2 - 4x - 45 = 0$
 $x^2 - 9x + 5x - 45 = 0$
 $x = 9, -5$
 $a = 9, b = -5$
 $y^2 - 4y - 96 = 0$
 $y^2 - 12y + 8y - 96 = 0$



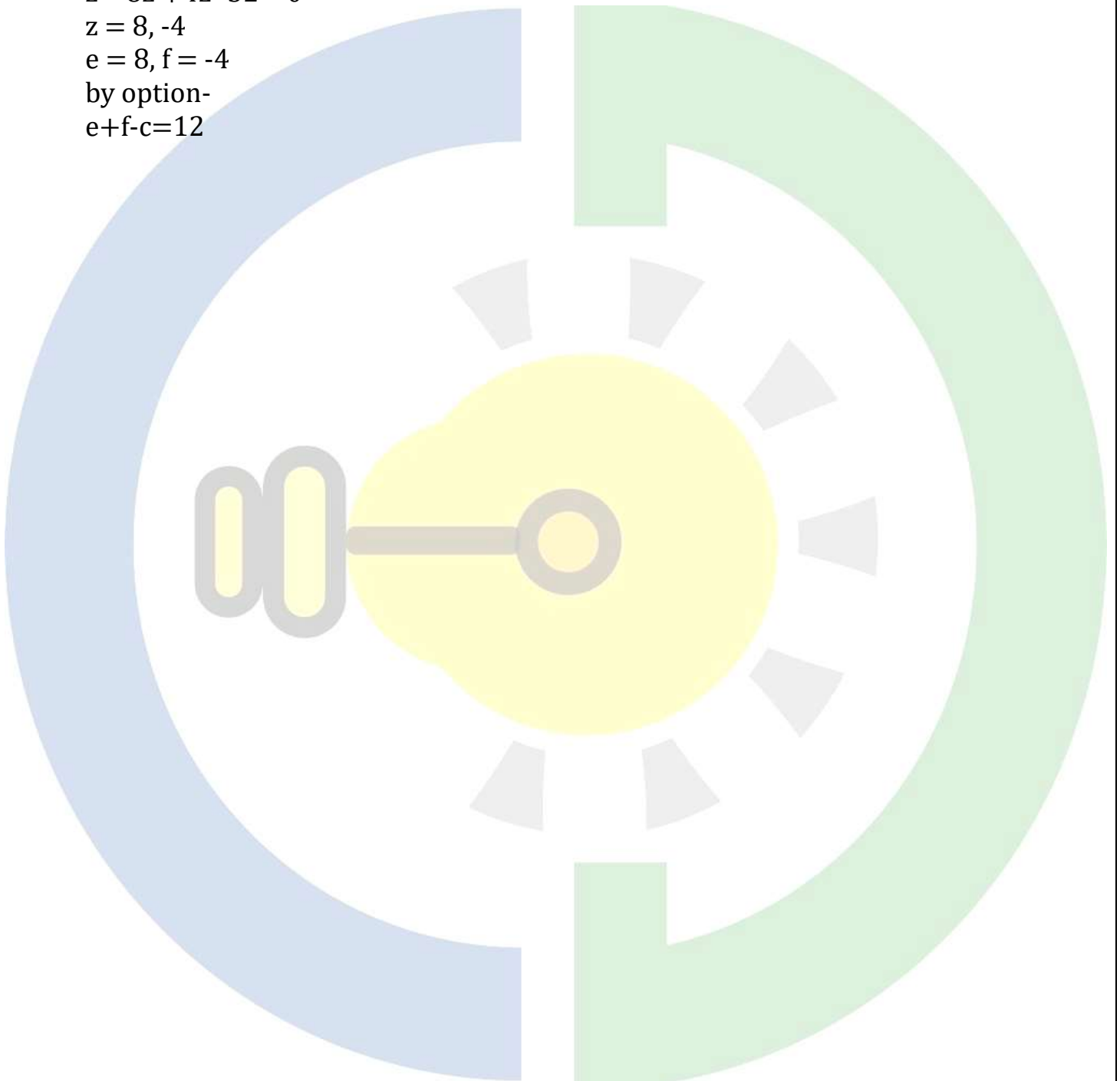


Top 100 Quadratic Equation



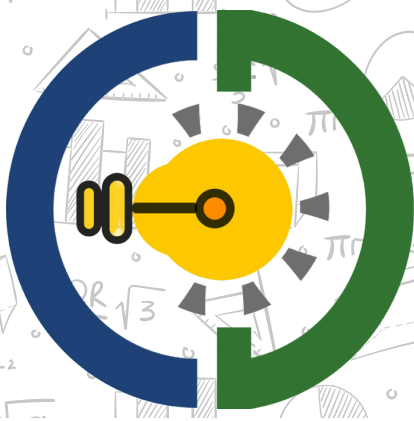
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$y = 12, -8$
 $c = -8, d = 12$
 $z^2 - 4y - 32 = 0$
 $z^2 - 8z + 4z - 32 = 0$
 $z = 8, -4$
 $e = 8, f = -4$
by option-
 $e + f - c = 12$



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CAREER DEFINER

REVISION SHEET (PART - 4)

WITH DETAILED SOLUTIONS



KAUSHIK MOHANTY

More than 8 Years Experience



- 1) For what value of k , are the roots of the quadratic equation $2x^2 - (2-k)x + 8 = 0$ are real & equal?
 - a) -6 or 10
 - b) 6 or 10
 - c) -6 or -10
 - d) 6 or -10
 - e) None of these

- 2) In which of the following equation the difference between the smaller and larger root is 3:
 - (i) $x * x - 4x - \sqrt{9x^2} = -10$
 - (ii) $y^2 - \sqrt{36y^2} - \sqrt{49y^2} = -2 * 4 * 5$
 - (iii) $\frac{z^2\sqrt{625z^6}}{5z^3} + (4 * 7) = 39z$
 - a) (i), (ii)
 - b) (i), (iii)
 - c) (i), (ii) and (iii)
 - d) (ii), (iii)
 - e) None of these

- 3) If X = difference between sum of highest root of equation (i) and (ii) and sum of smallest root of equation (i) and (ii), then which of the following statements is/are correct.
 - (i) $\sqrt{169a^2} - \sqrt{25a^2} + 6a - \left(\frac{1}{25^{-\left(\frac{1}{2}\right)}}\right) = 7a$
 - (ii) $3\sqrt{729b^3} * 2b + 15b - \sqrt{36} = -\sqrt{225b^2} - 6$
 - A. $x > 1$
 - B. $x < 1$
 - C. $x = 1$
 - a) Only A
 - b) Only B
 - c) Only C
 - d) Only A and B
 - e) Only B and C

- 4) If $x^2 - 15x + k = 0$ has roots a and b where $a > b$ whose difference is 3, then
 - (i) Value of k .
 - (ii) Value of square of smaller root.





(iii) Product of sum of roots to difference of roots.

- a) $i > ii < iii$
- b) $i > ii > iii$
- c) $i < ii < iii$
- d) $i = ii = iii$
- e) None of these

5) If the roots of the equation $2x^2 - 7x + K = 0$ is in the ratio 2:5, then the value of K is?

- a) 7
- b) 9
- c) 5
- d) 12
- e) None of these

6) Read the following quadratic equation carefully and answer the questions given below.

Equation I: $x^2 - 20x + K = 0$

Equation II: $y^2 - 12y + L = 0$

Note: Roots of the equation I are 'p' and 'q' and the roots the equation II are 'p-q' and 'q'.

- a) $K + L = 56$
- b) $K + L + 10 = 36$
- c) $K - L = 64$
- d) $K < L$
- e) $K = L$

7) Read the following quadratic equation carefully and answer the questions given below.

Equation I: $x^2 - 20x + K = 0$

Equation II: $y^2 - 12y + L = 0$

Note: Roots of the equation I are 'p' and 'q' and the roots the equation II are 'p-q' and 'q'.

Find the value of $(L - p)^{(p-q)/2}$

- a) 484
- b) 784
- c) 400
- d) 441
- e) 576





- 8) What will be the equation whose roots are 0.6 and 0.4 respectively?
- a) $5x^2 - 12x + 6 = 0$
 - b) $25x^2 - 25x + 6 = 0$
 - c) $7x^2 - 15x + 9 = 0$
 - d) $12x^2 - 8x + 8 = 0$
 - e) None of these
- 9) Solve both equations and form a new equation in variable 'z' using roots of equation 1 and 2 as possible instructions given below:
- (i) $1 - \frac{5}{x} + \frac{4}{x^2} = 0$
- (ii) $(y - 2)^2 = 2\frac{1}{4}$
- What will be new equation if roots of this are highest root of equation (i) and lowest root of equation(ii).
- a) $2z^2 - 9z + 4 = 0$
 - b) $z^2 - 9z + 4 = 0$
 - c) $2z^2 - z + 4 = 0$
 - d) $2z^2 - 9z + 14 = 0$
 - e) None of these
- 10) If p and q are the roots of the equations $x^2 - x - 5 = 0$, then find the value of $\frac{1}{p} + \frac{1}{q} - p \times q$.
- a) $21/5$
 - b) $24/5$
 - c) $26/5$
 - d) $28/5$
 - e) None of these
- 11) If p and q are the roots of $3x^2 - 10x + 3 = 0$, then what will be the equation in term y with roots p^2 and q^2 ?
- a) $y^2 - 8y + 7 = 0$
 - b) $9y^2 - 8y - 9 = 0$
 - c) $9y^2 - 82y + 9 = 0$
 - d) $9y^2 - 12y + 3 = 0$
 - e) None of these





- 12) If p and q are the roots of $x^2 - 4x + 5 = 0$, then what will be the equation with roots $(2p+1)$ and $(2q+1)$?
- a) $y^2 - 10y + 29 = 0$
 - b) $y^2 - 1y + 9 = 0$
 - c) $y^2 - 10y + 8 = 0$
 - d) $y^2 - 7y + 9 = 0$
 - e) None of these
- 13) ' m ' and ' 4 ' are the two roots of equation $p^2 - ap + b = 0$ and ' m ' and ' 2 ' are the two roots of equation $p^2 - (a-2)p + (b-10) = 0$. Find the value of $m * \frac{a}{b}$.
- a) $21/23$
 - b) $9/4$
 - c) $33/37$
 - d) $41/33$
 - e) None of these
- 14) If $x^3 - 12x^2 + 41x - 42 = 0$ then how many quadratic equations of the form $x^2 + bx + c = 0$, can be formed such that both the roots of the quadratic equation are common with the roots of $f(x) = 0$?
- a) 2
 - b) 5
 - c) 6
 - d) 7
 - e) None of these
- 15) If all the roots of $(x - k)^3(x - 11) - 125 = 0$ are integers, then Find the difference between the maximum and minimum possible values of k .
- a) 248
 - b) 22
 - c) 222
 - d) 38
 - e) None of these
- 16) In the given questions, two quantities are given, one as Quantity I and another as Quantity II. You have to determine relationship between two quantities and choose the appropriate option.
- Quantity I: value of ' a ' if, $a(a-1) = 6$





Quantity II:

Value of 'b' if $b^{-2} = 576$

- a) Quantity I > Quantity II
- b) Quantity I < Quantity II
- c) Quantity I \leq Quantity II
- d) Quantity I \geq Quantity II
- e) No relation

- 17) In the given questions, two quantities are given, one as Quantity I and another as Quantity II. You have to determine relationship between two quantities and choose the appropriate option.

Quantity I: If p, q and r are three consecutive whole numbers such that $p+q+r=9$, then

$$x^p - p^q x + p^{r-1} + r = 0$$

Quantity II: $y^2 - 19y + 84 = 0$

- a) Quantity I > Quantity II
- b) Quantity I < Quantity II
- c) Quantity I \leq Quantity II
- d) Quantity I \geq Quantity II
- e) None of these

- 18) There are two equation I and II given below. You have to solve both equations and answer the following questions.

Equation I. $4x^2 - 10x + k = 0$

Equation II. $3y^2 - y - 4 = 0$

Note: One root of the Equation I is $1/2$.

Find the sum of the highest root of the equation I and highest roots of equation II and k.

- a) $22/5$
- b) $22/3$
- c) 27
- d) 24
- e) None of these

- 19) There are two equation I and II given below. You have to solve both equations and answer the following questions.

Equation I. $2x^2 - 23x + 63 = 0$

Equation II. $5y^2 - 33y + 18 = 0$





If the difference between roots of Equation II is $x\%$ of the sum of roots of Equation I then find the value of x ?

- a) 45.85
- b) 46.95
- c) 48.96
- d) 50.50
- e) None of these.

20) Given $\sqrt[n]{U^x} \times (W + 1) = 12$ and W is largest even prime number. Also given, $(V + A + B) = \sqrt{36}$, $U = B + \sqrt[3]{64}$ and $4A + U = \sqrt{144}$. Find for value of $(U + V - A * B)$ which of the following statements is or are not correct. (Note: All variables are positive)

- i) Resultant value is a perfect cube.
- ii) Resultant value is equal to the W^3 .
- iii) Resultant value/ n = Integer value (where n is an even number)

- a) Only I
- b) Only I and II
- c) Only III
- d) Only II
- e) All I, II and III

21) Read the data carefully and answer the following the questions:

15, (a), (b), (c), (d)

$$a - 15 = x^2 + y$$

$$b - a = (x + 1)^2 + y (b > a)$$

$$c - b = (x + 2)^2 + y (c > b)$$

$$d - c = (x + 3)^2 + y (d > c)$$

Given, x = smallest root of $q^2 - 11q + 24 = 0$

And y = smallest root of $p^2 - 11p + 30 = 0$

Find the value of $a + b - c + d$?

- a) 100
- b) 120
- c) 130
- d) 140
- e) None of these





- 22) If p and q are the roots of $4x^2 - 17x + 4 = 0$, then what will be the equation in term y with roots p^3 and q^3 ?
- a) $64y^2 + 8143y + 64 = 0$
 - b) $y^2 - 17y + 44 = 0$
 - c) $64y^2 - 179y + 224 = 0$
 - d) $6y^2 - 19y + 264 = 0$
 - e) None of these

- 23) In the given questions, two quantities are given, one as Quantity I and another as Quantity II. You have to determine relationship between two quantities and choose the appropriate option.

Quantity I: value of 'a' if, $a^2 - 22a - 504 = 0$

Quantity II: Value of 'b' if $b^2 - ab + 68 = 0$ where a is highest root of Quantity I.

- a) Quantity I > Quantity II
 - b) Quantity I < Quantity II
 - c) Quantity I \leq Quantity II
 - d) Quantity I \geq Quantity II
 - e) No relation
- 24) In the following questions, some equations are given to you. You are expected to solve them and answer the given questions accordingly.
- Equation 1. $12x^2 - 12x - 9 = 0$
- Equation 2. $9y^2 - 12y + 4 = 0$
- Find which of the following statement(s) is/are definitely true related to given equations.
- I. Maximum value of x , is 0.83 more than value of y .
 - II. Value of x is more than that of y .
 - III. Ratio of sum both roots of equation 2 and that difference of roots of equation 1 is 2:3 respectively.
- a) Only I
 - b) Only I and II
 - c) Only II
 - d) Only II and III
 - e) Only I and III





Top 25

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25) In the following questions, some equations are given to you. You are expected to solve them and answer the given questions accordingly.

Equation 1. $x^2 - x - 6 = 0$

Equation 2. $y^2 - 9y + 20 = 0$

Equation 3. $z^2 - z - 56 = 0$

Find which of the following statement(s) is/are definitely true related to given equations.

I. Minimum value of y , is 50% of that of maximum value of z .

II. Value of x is more than that of y .

III. Ratio of product of both factors of equation 2 and that sum of equation 3 is 20:1 respectively.

- a) Only I
- b) Only I and II
- c) Only II
- d) Only II and III
- e) Only I and III





SOLUTION

1) Answer - A

Condition of roots are equal $b^2 - 4ac = 0$

Here, $a=2$, $b=-(2-k)$, $c=8$

$$\{-(2-k)\}^2 - 4 \cdot 2 \cdot 8 = 0$$

$$\{-(2-k)\}^2 - 64 = 0$$

$$\{-(2-k)\}^2 = 64$$

$$2-k=8, 2-k=-8$$

$$K=-6, k=10$$

2) Answer - A

I. $x^2 - 4x - \sqrt{(9x^2)} = -10$

$$x^2 - 4x - 3x = -10$$

$$x^2 - 7x + 10 = 0$$

$$x = 5, 2$$

Difference between the smaller and larger root is 3.

II. $y^2 - \sqrt{(36y^2)} - \sqrt{(49y^2)} = -2 \cdot 4 \cdot 5$

$$y^2 - 6y - 7y + 40 = 0$$

$$y^2 - 13y + 40 = 0$$

$$y = 8, 5$$

Difference between the smaller and larger root is 3.

III. $z^2 \sqrt{(625z^6)} / 5z^3 + (4 \cdot 7) = 39z$

$$5z^2 + 28 = 39z$$

$$5z^2 - 39z + 28 = 0$$

$$z = 35/5, 4/5$$

$$z = 7, 4/5$$

Difference between the smaller and larger root is $31/5$.

3) Answer - B

I. $\sqrt{(169a^2)} - \sqrt{(25a^2)} + 6a - (1/25 - 1/2) = 7a$

$$13a - 5a + 6a - 5 = 7a$$

$$7a = 5$$

$$a = 5/7$$

II. $3\sqrt{(729b^3)} \cdot 2b + 15b + \sqrt{36} = -\sqrt{(225b^2)} - 6$

$$9b \cdot 2b + 15b + 6 = -15b - 6$$

$$18b^2 + 30b + 12 = 0$$





Top 25

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$$3b^2 + 5b$$

$$+2=0$$

$$b = -1, -0.67$$

X = sum of highest root of equation (i) and (ii) – sum of the smallest root of equation (i) and (ii)

$$X = 5/7 - 0.67 - 5/7 + 1$$

$$X = 0.33 < 1$$

4) Answer - A

$$a + b = 15$$

$$a - b = 3$$

$$a = 9, b = 6$$

I. value of $k = 54$

II. $(6)^2 = 36$

III. $(9+6)*(9-6) = 15*3 = 45$

5) Answer - C

Here $a=2, b=-7, c=K$

$$\text{Sum of the roots} = -b/a = -(-7/2) = 7/2$$

$$\text{Roots} = 2x, 5x$$

$$2x + 5x = 7/2$$

$$7x = 7/2$$

$$x = 1/2$$

$$\text{Product of the roots} = c/a$$

$$2x * 5x = K/2$$

$$2/2 * 5/2 = K/2$$

$$K = 5$$

6) Answer - C

Equation I

Roots p and q

$$\text{Sum of roots} = 20$$

$$20 = p + q \text{ -----(a)}$$

Equation II

Roots q and $p-q$

$$\text{Sum of roots} = 12$$

$$q + p - q = 12$$

$$p = 12 \text{ by equation (a)}$$

$$q = 8$$

$$K = \text{product of roots} = p * q = 12 * 8 = 96$$

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Top 25

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$L =$

$$q) * q = 4 * 8 = 32$$

$$K - L = 96 - 32 = 64$$

(p-

7) Answer - C

Equation I

Roots p and q

$$\text{Sum of roots} = 20$$

$$20 = p + q \text{ -----(a)}$$

Equation II

Roots q and p-q

$$\text{Sum of roots} = 12$$

$$q + p - q = 12$$

$$p = 12 \text{ by equation (a)}$$

$$q = 8$$

$$K = \text{product of roots} = p * q = 12 * 8 = 96$$

$$L = (p - q) * q = 4 * 8 = 32$$

$$L - p = 32 - 12 = 20$$

$$p - q / 2 = 12 - 8 / 2 = 2$$

$$(L - p)(p - q) / 2 = 20^2 = 400$$

8) Answer - B

Given roots are 0.6, 0.4

$$\text{Sum of roots} = 0.6 + 0.4 = 1.0$$

$$\text{Product of roots} = 0.6 * 0.4 = 0.24 = 24 / 100 = 6 / 25$$

$$X^2 - (\text{sum of roots})x + \text{product of roots} = 0$$

$$X^2 - 1x + (6/25) = 0$$

$$25x^2 - 25x + 6 = 0$$

9) Answer-A

$$1 - 5/x + 4/x^2 = 0$$

$$x^2 - 5x + 4 = 0$$

$$x = 4, 1$$

$$(y - 2)^2 = 2(1/4)$$

$$y^2 + 4 - 4y = 9/4$$

$$4y^2 + 16 - 16y = 9$$

$$4y^2 - 16y + 7 = 0$$

$$y = 14/4, 2/4 = 3.5, 0.5$$

roots of new equations = highest root of equation (i) and lowest root of equation(ii).

$$= 4, 0.5$$

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Top 25

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equation

New

$$z^2 - (\text{sum of roots})z + \text{product of roots} = 0$$

$$z^2 - (4+0.5)z + 4*0.5 = 0$$

$$z^2 - 4.5z + 2 = 0$$

$$2z^2 - 9z + 4 = 0$$

10) Answer- B

$$\text{Here } a=1, b=-1, c=-5$$

$$\text{Sum of roots} = p+q = -b/a = -(-1)/1 = 1$$

$$\text{Product of roots} = p*q = c/a = (-5)/1 = -5$$

$$1/p + 1/q - p*q$$

$$= p+q/pq - p*q$$

$$= 1/(-5) - (-5)$$

$$= -1/5 + 5$$

$$= 24/5$$

11) Answer - C

$$3x^2 - 10x + 3 = 0$$

$$p + q = 10/3$$

$$p*q = 1$$

$$x^2 - (p^2+q^2)x + p^2q^2 = 0$$

$$(p+q)^2 = p^2 + q^2 + 2pq$$

$$(p+q)^2 - 2pq = p^2 + q^2$$

$$(10/3)^2 - 2*1 = p^2 + q^2$$

$$100/9 - 2 = p^2 + q^2$$

$$100 - 18/9 = p^2 + q^2$$

$$82/9 = p^2 + q^2$$

$$p^2*q^2 = (p*q)^2 = 1$$

New equation

$$y^2 - 82/9y + 1 = 0$$

$$9y^2 - 82y + 9 = 0$$

12) Answer - A

$$x^2 - 4x + 5 = 0$$

$$p+q = 4$$

$$p*q = 5$$

roots $(2p+1)$ and $(2q+1)$

$$\text{sum of the roots} = 2p+1+2q+1$$

$$= 2p+2q+2 = 2(p+q+1) = 2*(4+1)$$

$$= 10$$

$$\text{Product of roots} = (2p+1)*(2q+1)$$

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$$=4pq$$

$$\begin{aligned} &+2p+2q+1 \\ &=4*5+2(p+q)+1 \\ &=20+2*4+1 \\ &=20+8+1 \\ &=29 \end{aligned}$$

New equation
 $y^2-10y+29=0$

13) Answer- B

$$p^2 - ap + b = 0$$

$$\text{root} = m, 4$$

$$m+4=a$$

$$m*4=b$$

$$p^2 - (a-2)p + (b-10) = 0$$

$$\text{root} = m, 2$$

$$m+2=a-2$$

$$m*2=b-10$$

$$2m=b-10$$

$$2m+10=b$$

$$2m+10=4m$$

$$m=5$$

$$b=20$$

$$a=9$$

$$m*a/b=5*9/20=9/4$$

14) Answer C

$$x^3 - 12x^2 + 41x - 42 = 0$$

$$x^3 - 2x^2 - 10x^2 + 20x + 21x - 42 = 0$$

$$x^2(x-2) - 10x(x-2) + 21(x-2) = 0$$

$$(x-2)(x^2 - 10x + 21) = 0$$

$$(x-2)(x^2 - 3x - 7x + 21) = 0$$

$$(x-2)\{x(x-3) - 7(x-3)\} = 0$$

$$(x-2)(x-3)(x-7) = 0$$

the possible equations are,

$$(x-2)^2$$

$$(x-3)^2$$

$$(x-7)^2$$

$$(x-2)(x-3)$$

$$(x-2)(x-7)$$

$$(x-3)(x-7)$$

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We get 6 equations

15) Answer A

$$(x - k)^3(x - 3) - 125 = 0$$

$$(x - k)^3(x - 3) = 125$$

roots of the equation are integer, that means x is also an integer

possible Cases are,

case I:

$$(x - k)^3 = 125, (x - 11) = 1$$

$$x - 11 = 1$$

$$x = 12$$

$$(12 - k)^3 = 125$$

$$12 - k = 5$$

$$k = 7$$

case II:

$$(x - k)^3 = 1, (x - 11) = 125$$

$$x - 11 = 125$$

$$x = 136$$

$$(136 - k)^3 = 1$$

$$136 - k = 1$$

$$k = 135 \text{ (Maximum value)}$$

case III:

$$(x - k)^3 = -125, (x - 11) = -1$$

$$x - 11 = -1$$

$$x = 10$$

$$(10 - k)^3 = -125$$

$$10 - k = -5$$

$$k = 15$$

case IV:

$$(x - k)^3 = -1, (x - 11) = -125$$

$$x - 11 = -125$$

$$x = -114$$

$$(-114 - k)^3 = -1$$

$$-114 - k = -1$$

$$k = -113 \text{ (Minimum value)}$$

$$\text{Req. Difference} = 135 - (-113) = 135 + 113 = 248$$

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16) Answer - E

value of 'a' if, $a(a-1) = 6$

$$a^2 - a - 6 = 0$$

$$a = +3, -2$$

Value of 'b' if $b^{-2} = 576$

$$1/b^2 = 24$$

$$b = 1/24, -1/24 \text{ (No relation)}$$

17) Answer -B

Quantity I:

Let three consecutive whole numbers $a, a+1, a+2$

$$a + a + 1 + a + 2 = 9$$

$$3a + 3 = 9$$

$$3a = 9 - 3$$

$$3a = 6$$

$$a = 2$$

$$p = 2, q = 3, r = 4$$

$$x^p - p^q x + p^{r-1} + r = 0$$

$$x^2 - 2^3 x + 2^{4-1} + 4 = 0$$

$$x^2 - 8x + 2^3 + 4 = 0$$

$$x^2 - 8x + 8 + 4 = 0$$

$$x^2 - 8x + 12 = 0$$

$$x = 6, 2$$

Quantity II:

$$y^2 - 19y + 84 = 0$$

$$y = 12, 7$$

$$QI < QII$$

18) Answer-B

For equation I

Let root a and b

$$\text{Given } a = 1/2$$

$$\text{Sum of roots} = 10/4 = 1/2 + b$$

$$b = 5/2 - 1/2 = 4/2 = 2$$

$$\text{product of roots} = k/4$$

$$a * b = k/4$$

$$1/2 * 2 = k/4$$

$$k = 4$$





Top 25

Quadratic Equation (Mains Level)



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For

$$3y^2 - y - 4 = 0$$

$$y = +4/3, -3/3$$

$$= +4/3, -1$$

sum of the highest root of the equation I and highest roots of equation II and k.

$$b + 4/3 + 4$$

$$= 2 + 4/3 + 4$$

$$= 6 + 4 + 12/3$$

$$= 22/3$$

equation II

19) Answer- B

For Equation I.

$$2x^2 - 23x + 63 = 0$$

$$x = 14/2, 9/2$$

For Equation II.

$$5y^2 - 33y + 18 = 0$$

$$y = 30/5, 3/5$$

difference between roots of Equation II is x% of the sum of roots of Equation I

$$30 - 3/5 = (x/100) * (14 + 9)/2$$

$$27/5 = x * 23/200$$

$$x = 200 * 27/5 * 23$$

$$x = 46.95$$

20) Answer - C

$$\text{Given } \sqrt[3]{U^x} \times (W + 1) = 12$$

$$U^x (W + 1) = 12$$

$$W = 2$$

$$U^x = 12$$

$$U = 4$$

$$U = B + \sqrt[3]{64}$$

$$U = B + 4$$

$$4 = B + 4$$

$$B = 0$$

$$4A + U = \sqrt{144}$$

$$4A + 4 = 12$$

$$A = 12 - 4/4$$

$$A = 2$$

$$(V + A + B) = \sqrt{36}$$

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Top 25

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$$V +$$

$$V = 6 - 2$$

$$V = 4$$

$$\text{Value } U + V - A * B = 4 + 4 - 2 * 0 = 8 \text{RR}$$

$$2 + 0 = 6$$

21) Answer-B

$$q^2 - 11q + 24 = 0$$

$$q = 8, 3$$

$$x = 3$$

$$p^2 - 11p + 30 = 0$$

$$p = 6, 5$$

$$y = 5$$

$$a - 15 = x^2 + y$$

$$a = 9 + 5 + 15$$

$$a = 29$$

$$b - a = (x + 1)^2 + y$$

$$b = 16 + 5 + 29 = 50$$

$$c - b = (x + 2)^2 + y$$

$$c = 25 + 5 + 50$$

$$c = 80$$

$$d - c = (x + 3)^2 + y$$

$$d = 36 + 5 + 80 = 121$$

$$a + b - c + d = 120$$

22) Answer -A

$$4x^2 - 17x + 4 = 0$$

$$p + q = 17/4$$

$$p * q = 4/4 = 1$$

$$(p + q)^3 = p^3 + q^3 + 3p * q(p + q)$$

$$(17/4)^3 = p^3 + q^3 + 3 * 16 * 17/4$$

$$4913/64 - 204 = p^3 + q^3$$

$$4913 - 13056/64 = p^3 + q^3$$

$$-8143/64 = p^3 + q^3$$

$$p^3 * q^3 = (p * q)^3 = 1$$

New equation

$$y^2 + 8143/64y + 1 = 0$$

$$64y^2 + 8143y + 64 = 0$$

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Quadratic Equation (Mains Level)



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23) Answer - E

Quantity I

$$a^2 - 22a - 504 = 0$$

$$a = 36, -14$$

Quantity II

$$b^2 - ab + 68 = 0 \text{ where } a = 36$$

$$b^2 - 36b + 68 = 0$$

$$b = 34, 2$$

no relation

24) Answer - E

$$\text{Equation 1. } 12x^2 - 12x - 9 = 0$$

$$X = +18/12, -6/12 = 1.5, -0.5$$

$$\text{Equation 2. } 9y^2 - 12y + 4 = 0$$

$$Y = 6/9, 6/9 = 0.67, 0.67$$

I. $1.5 - 0.67 = 0.83$

II. wrong

III. $4/3 : 2 = 2:3$

25) Answer - E

$$\text{Equation 1. } x^2 - x - 6 = 0$$

$$X = 3, -2$$

$$\text{Equation 2. } y^2 - 9y + 20 = 0$$

$$Y = 5, 4$$

$$\text{Equation 3. } z^2 - z - 56 = 0$$

$$Z = 8, -7$$

I. Minimum value of y, is 50% of that of maximum value of z.
 $4/8 * 100 = 50\%$

II. Value of x is more than that of y. (wrong)

III. Ratio of product of both factors of equation 2 and that sum of equation 3 is -
20:1 respectively.
 $5*(4):8+(-7)=20:1$

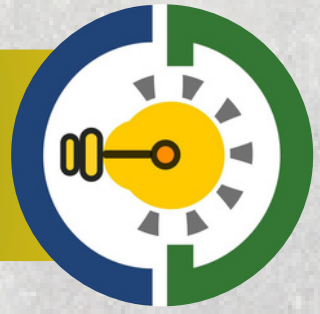
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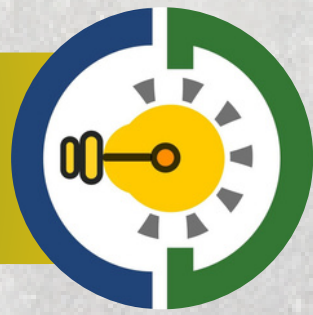
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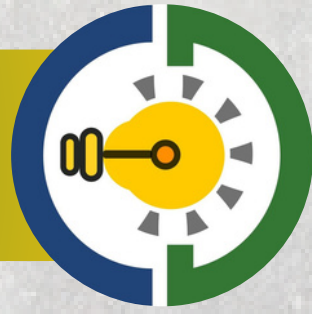
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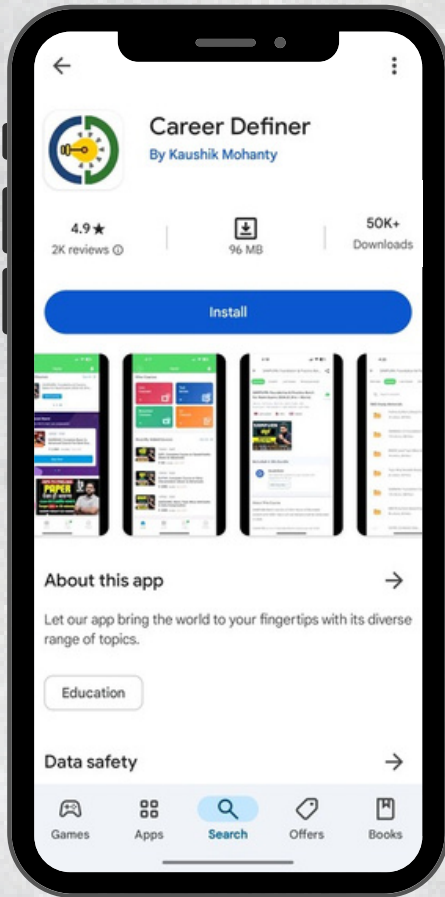
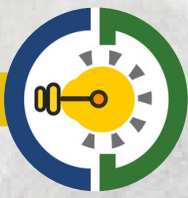
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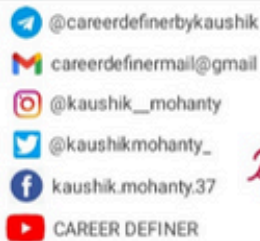
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